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Classwide Functional Analysis and Comparison of Function-Based Interventions with Preschoolers

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CLASSWIDE FUNCTIONAL ANALYSIS AND COMPARISON OF FUNCTION-BASED INTERVENTIONS WITH PRESCHOOLERS

by

Veena Yamasani Poole

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
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ABSTRACT

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Few studies have used experimental functional analysis procedures and function-based treatments using the class as a unit of analysis. Two kindergarten classrooms, one Head Start classroom and their teachers participated in the study. Both the assessment and intervention included teacher-implemented functional analyses and intervention using the class as the unit of analysis. Functional assessment procedures included a direct-descriptive screening observation, teacher interviews, and functional analyses. Assessment data were used to develop function-based interventions. An alternating treatment design with a verification phase was used to evaluate treatment effects. Function-based interventions, specifically, differential reinforcement of appropriate behaviors (DRA), resulted in decreases in disruptive behaviors in two out of three classrooms. Moreover, DRA was effective for increasing appropriate replacement behaviors. Assessment and treatment acceptability data indicated that both the assessment and intervention procedures were acceptable to the teachers.

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CHAPTER I

INTRODUCTION

The majority of school based referrals to psychologists are for disruptive behaviors (Rose, 1998; Skiba, Peterson, & Williams, 1997; Sterling-Turner, Robinson, &Wilczynski, 2001). Furthermore, as many as 35% of preschool age children display disruptive behaviors at clinically significant levels (Anderson, 1983; Carr & Durand, 1985; Webster-Stratton & Hammond, 1998; Webster-Stratton, Reid & Hammond, 2001). With regard to associated developmental outcomes, research indicates that early childhood behavioral difficulties may lead to social, academic and behavioral difficulties during adolescence (Barkley, 1998; Campbell & Ewing, 1990; Pierce, Ewing, & Campbell, 1999). Moreover, frequent disruptive behaviors may lead to restrictive educational placements (Arcenaux & Murdock, 1997). Therefore, there is an urgent need to identify effective assessment and intervention procedures to address behavior problems in young children.

Although there is a high incidence of disruptive behaviors in preschool settings, there is limited research in functional assessment and intervention methods with this population. Additionally, teachers may not be well equipped to deal with disruptive behaviors in the preschool classroom setting (Buscemi, Bennett, & Thomas, 1996; Scott, & Nelson, 1999). Therefore, it is important to assist teachers with dealing with disruptive behaviors to improve academic performance and social outcomes in preschool children (Webster-Stratton, 1998; Webster-Stratton et al., 2001). Several authors have successfully trained teachers to conduct assessment and interventions with preschool

children (Dufrene, Doggett, Henington, & Watson, 2007; Kamps, Ellis, Mancina, &Wyble, 1995)

Functional behavior assessment (FBA) is a method for assessing the relationship between environmental variables (i.e., antecedents and consequences) and behavior. An FBA may include indirect methods, direct-descriptive methods, and experimental functional analysis. Indirect methods may include record reviews, rating scales, and/or interviews. Direct descriptive methods may include A-B-C narrative recordings, scatter plots, and conditional probability assessment. Descriptive methods allow for development of hypotheses regarding the maintaining variables for a problem behavior (Sterling-Turner et al., 2001). Functional analysis involves experimental manipulations of environmental variables in analogue or naturalistic settings to identify a functional relationship between a behavior and a consequent event. Information about the controlling variables from descriptive assessments are considered to be correlational in nature (i.e., sequences of events occurring in temporal proximity) whereas information from functional analysis is considered to be causal in nature (Horner, 1994).

According to Ervin et al.'s (2001) review of the school-based functional assessment literature, FBA often leads to effective interventions. Unfortunately, most of the assessments included in the review were conducted with individuals with disabilities. Research with typically developing children in general classroom settings is limited (Ervin et al.). Additionally, very few FBA studies have been done with preschool children within their classrooms (e.g., Kamps et al., 1995). Considering that the 2004 reauthorization of the Individuals with Disabilities Act (IDEA; P.L. 108-446) requires the use of effective assessment and intervention for students with disabilities who exhibit

problem behaviors, it is important to build substantial empirical support for the use of these procedures in classrooms.

Once behavioral function is identified, an effective intervention can be designed to address the problem behavior. Function based treatments (Iwata, Vollmer, Zarcone, & Rodgers, 1993; Kamps, Ellis, Mancina, Wyble, & Greene, 1995) have emerged as a useful means for ameliorating problem behaviors for a variety of individuals, target behaviors and settings. Interventions may include antecedent manipulations of the environment (e.g., task difficulty), consequent based strategies that include reinforcement and extinction strategies, or combined procedures. Specifically, differential reinforcement procedures have emerged as an effective intervention for eliminating the source of reinforcement through the systematic withholding of reinforcement for inappropriate behavior and providing the functional reinforcer for the appropriate behavior.

Cooper, Heron, and Heward (2007), outlined the use of differential reinforcement procedures to decrease problem behaviors while simultaneously increasing the occurrence of appropriate behaviors. According to Cooper et al. (2007), there are four variations of differential reinforcement procedures, including differential reinforcement of incompatible behaviors (DRI), differential reinforcement of alternative behaviors (DRA), differential reinforcement of other behavior (DRO) and differential reinforcement of low rates of responding (DRL). DRI includes providing reinforcement for a behavior that is topographically incompatible (e.g., on-task behavior such as looking at the book or the teacher versus off-task behavior) with the behavior targeted for reduction. Additionally, DRI includes withholding reinforcement for the problem behavior. DRA entails reinforcing a behavior that is a desirable alternative to the problem behavior which

may or may not be topographically incompatible with the problem behavior (e.g., requesting a break instead of exhibiting a tantrum to escape a task) while simultaneously putting the inappropriate behavior on extinction. DRO on the other hand entails reinforcing the absence of the problem behavior for the entire interval or for specified times during that interval (i.e., omission training). DRL includes reducing the rate of a behavior by providing reinforcement if the behavior occurs less than some number of times. This study will include evaluation of DRA and DRO procedures, so the subsequent literature review will focus on only those two differential reinforcement procedures.

While both DRO and DRA can be effective in decreasing problem behavior, there are some important differences between the two interventions. First, DRO allows reinforcement for the non-occurrence of some problem behavior. As a result, there is no explicit programming for an appropriate replacement behavior. DRA includes explicit programming for an alternative replacement behavior because reinforcement is delivered following occurrence of the pre-specified replacement behavior but is withheld contingent upon occurrence of the problem behavior. As a result, DRA may be considered more socially valid, especially for typically developing individuals whose level of functioning is such that they have the capacity to learn a variety of adaptive replacement behaviors. Unfortunately, the literature does not include a sufficient number of studies directly comparing DRO and DRA procedures with regard to impact on problem and replacement behaviors (LeGray, Dufrene, Sterling-Turner, Olmi, & Bellone, 2010).

CHAPTER II

REVIEW OF RELEVANT LITERATURE

The review of literature will include the following: (a) historical roots of functional assessment, (b) current trends in FBA literature, (c) functional assessment and use of differential reinforcement procedures (i.e., DRA and DRO studies), (d) a comparison of differential reinforcement procedures, and (e) classwide functional assessment.

Historical Roots of Functional Assessment

Carr (1977) stressed the role of multiple maintaining variables (e.g., positive reinforcement, negative reinforcement or automatic reinforcement) that may produce or maintain self-injurious behaviors. He further stressed the need to identify and address the specific function of the target behavior to increase the likelihood of success with the intervention. Based on Carr's (1977) seminal paper, functional analysis methodology has evolved to identify and address the function of a variety of target behaviors across individuals and settings. Functional analysis methodology, as pioneered by Iwata, Dorsey, Slifer, Bauman, and Richman (1982), involves the manipulation of various experimental conditions and a control condition. The experimental conditions and control condition are counterbalanced and alternated in a multi-element design. The conditions that are manipulated include consequent events that represent reinforcement categories that might reinforce a behavior for an individual. In the original Iwata et al. study, reinforcement categories that were manipulated included access to social attention, escape from task demands, unstructured play where there was access to toys and attention for appropriate behaviors and no task demands (i.e., control condition) and an alone

condition designed to test an automatic reinforcement function. Subsequent functional analysis research has included a variety of conditions, but the general theme is toward evaluating various reinforcement contingencies that might be related to an individual's problem behavior.

Current Trends in FBA Literature

Although traditional functional analysis methodology has utility in determining behavioral function, it could be too time consuming and cumbersome for some settings (Axelrod, 1987, Lenox &Miltenberger, 1989). As a result, brief functional analysis (BFA) procedures have emerged as an alternative means for quickly assessing behavioral function in outpatient clinic settings (Cooper, Wacker, Sasso, Reimers, & Donn, 1990; Northup, Wacker, Sasso, Steege, Cigrand, Cook, &DeRaad, 1991). Furthermore, function-based interventions, including differential reinforcement procedures, derived from BFA data have effectively improved behavior (Carr & Durand, 1985; Northup et al., 1991). Additionally, BFA procedures have moved from outpatient clinic settings to classrooms (e.g., Boyajian, DuPaul, Handler, Eckert, & McGoey, 2001) However, the usefulness of FBA procedures may be increased if the procedures were determined effective for assessing behavioral function at a group level.

Recent research has included conducting FBAs using the class as a unit of analysis to design effective class-wide interventions (Poole, 2009; VanDerHeyden, Witt, &Gatti, 2001). The use of BFA and subsequent class-wide differential reinforcement procedures may increase the efficiency of intervention delivery, particularly in preschool classrooms where consequences may be delivered consistently across individual children in the classroom. The following sections will include descriptions and a discussion of

FBAstudies conducted across a variety of settings and populations. Additionally, the descriptions and discussion of those studies will include information related to differential reinforcement procedures based on FBA data.

Functional Assessment and Use of Differential Reinforcement Procedures

Asmus, Vollmer, and Borrero (2002) discussed a variety of consequent procedures based on FBA data that may be implemented. Ultimately, they recommended differential reinforcement of alternative behavior (DRA) when considering differential reinforcement procedures because it decreases the possibility of extinction bursts and the inadvertent reinforcement of target behaviors. Furthermore, DRA increases the use of an appropriate replacement behavior (e.g., participation in a task or a communicative response).

Studies using DRA

Several authors have used differential reinforcement of alternative behaviors with individuals with developmental disabilities. For example, Carr and Durand (1995) used functional communication training (FCT), which is a form of DRA, to decrease problematic behavior in children ages seven to 14 with developmental disabilities and limited communication skills. The authors used functional assessment methods, including teacher interviews, direct observations, and hypothesis-based functional analysis. The functional analysis identified situational variables (i.e., high and low adult attention or easy and difficult tasks) as maintaining the inappropriate behaviors (i.e., aggression, tantrums or self-injury). Carr and Durand used FCT (i.e., relevant and irrelevant responses) to address the problem behaviors. The authors successfully demonstrated an

increase in the use of functionally equivalent responses (e.g., requests for attention or assistance) across participants.

Vollmer, Roane, Ringdahl, and Marcus (1999) demonstrated the need to implement DRA procedures at optimal levels (i.e., at varying schedules of reinforcement) so as to not jeopardize treatment gains. The participants were three individuals with developmental disabilities (i.e., severe to profound range of mental retardation) between the ages of four and 17 years. The authors used results from a functional analysis to design interventions (e.g., differential negative reinforcement of alternative behaviors in the form of giving a break contingent on compliance). Once DRA was found to be effective in the first phase, different schedules of DRA were implemented to evaluate the effects of treatment integrity failures. DRA Interventions at "full implementation" (i.e., reinforcing every alternative response) were found to be more successful than "partial implementation" (i.e., reinforcing one out of four appropriate responses and reinforcing some inappropriate responses). Specifically, appropriate behaviors increased following full implementation of DRA with concomitant decreases in inappropriate behaviors while the converse was true of the partial implementation schedules. Implications of the study included successful use of function based DRA in increasing appropriate behaviors while simultaneously decreasing inappropriate behaviors.

Watson, Ray, Sterling-Turner, and Logan (1999) extended research on functional assessment methodology by training teachers to implement functional analysis conditions and interventions. The participant was a 10-year old male diagnosed with severe/profound mental retardation who exhibited high rates of SIB (i.e., head banging, face slapping, kicking and scratching). Functional assessments that included teacher

interviews and direct descriptive assessments were inconclusive, so a functional analysis using a multi-element design as outlined by Iwata et al. (1982) was conducted. Four functional analysis conditions (i.e., attention, escape, tangible, alone) were tested. Functional analysis conditions were first modeled by the consultant before the teacher practiced implementing the conditions with feedback from a consultant. Later, the teacher implemented functional analysis, and analyses of data indicated that the function of SIB was escape from task demands. A treatment package was constructed using escape extinction and DRA (i.e., access to a preferred activity contingent on compliance or performance on a task).Results of the interventions showed that SIB declined to near zero levels when the intervention was being implemented, with generalization to other settings in the school. Unfortunately, no data were reported regarding increases for appropriate replacement behaviors.

The study by Watson et al. (1999) has implications for linking functional analysis data to treatment, especially because previous interventions to decrease SIB with the child had failed. Additionally, using teachers in the implementation of functional analysis and interventions in a classroom setting extends the scope of external validity of the assessment and intervention methodology. A limitation of the study included the use of an AB design across three different teachers, which results in multiple threats to internal validity (e.g., lack of replication of treatment effects). Furthermore, the authors did not report the use of appropriate replacement behaviors, which may limit conclusions about the social validity of the intervention procedures.

While the above studies outline the use of FBA and DRA interventions with individuals with developmental disabilities, others have used FBA and DRA with

children of typical development children in classrooms. Broussard and Northup (1995) designed effective interventions in a general education classroom using functional analysis to confirm the hypothesized function developed through a descriptive assessment (i.e., teacher interviews, academic records review, and informal observations). One of the three hypothesized variables (e.g., teacher attention, peer attention and escape from academic tasks) from the functional analysis was selected for each participant and manipulated in a brief multi-element design that included a contingency reversal. Contingency reversals, which consisted of extinction and differential reinforcement of alternative (DRA) behavior, were used to confirm the functional relationship between the students' target behaviors and consequent events. Function based interventions included differential reinforcement of requests for attention (i.e., raising hand) and work completion or provision of a break (i.e., interact with peer for two minutes) for work completion and/or work accuracy. The participants were three boys ranging in age between six and nine years, who were of average intelligence and were at risk for special education placement. One of the participants was diagnosed with Attention-Deficit Hyperactivity Disorder (ADHD) and received Ritalin®. Dependent variables included disruptive behavior and task completion. Disruptive behavior included talking out, out-of-seat, property destruction, and noncompliance. Function-based interventions resulted in near-zero levels of problem behaviors with corresponding increases in task completion for all three participants.The authors concluded that functional analysis could be successfully linked to treatment in general education classrooms with children of average intelligence.

Broussard and Northup (1995) noted limitations to their study. First, the descriptive assessments were time consuming and required more effort, so the authors highlighted the need for more efficient procedures. Second, the authors were not able to replicate all the functional analysis conditions although the authors addressed this shortcoming by using descriptive assessment data as an adjunct to BFA data. Nonetheless, the use of functional analysis for assessment and intervention planning (i.e., DRA procedures) in the context of general education, using students with average intelligence, extended the FBA literature. Additionally, increased work completion and accuracy were reported, further extending habilitative validity of the assessment and intervention procedures.

Kamps et al. (1995) used AB and ABB' designs to conduct case studies of function-based treatments for preschool students with and without developmental delays. An FBA consisting of teacher reports, direct observations and descriptive assessments revealed multiple maintaining variables (e.g., tangible, attention) across students. Hypothesis-based interventions were developed and tested for all 10 children. Interventions included increased supervision, positive reinforcement for appropriate behaviors (e.g., pro-social behaviors, appropriate peer interactions and in-seat behavior) and reduced attention for inappropriate behaviors. Participants included 10 Head Start and kindergarten children, ranging in age from four to six years. The dependent variables were compliance, aggression, out-of-seat behaviors and negative verbalizations. Results indicated that the functional assessment and subsequent interventions increased appropriate behaviors and decreased inappropriate behaviors in all 10 participants.

The limitations of the study by Kamps et al. (1995) included the use of a non-experimental AB design for intervention evaluation without a reversal, which limits

internal validity because it fails to demonstrate replication of treatment effects. Also, according to the authors, procedural integrity data were not collected for teachers' implementations of intervention, which limitsinternal and external validity of findings. Specifically, it limits conclusive evidence about the extent to which the independent variable was responsible for changes in the dependent variable and the extent to which implementation by teachers may be predicted across other studies and applied settings.

Umbreit (1995) used analogue BFA and curriculum-based assessment (CBA) to design interventions in a regular kindergarten classroom to decrease disruptive behavior. The participant was a five-year old boy diagnosed with mild mental retardation. He attended general education class for 3 hours per day and was at risk for being placed in a self-contained setting on a full-time basis. Disruptive behavior included closing eyes, refusing to complete tasks, eloping and sitting on the floor and crying. The BFA identified an escape function while the curriculum-based assessment identified two instructional problems (e.g., difficult tasks and students not being provided with assistance) leading to escape. During the BFA phase, contingency reversals identified that DRA (i.e., functional communication training) in the form of reinforcing requests for break while ignoring all other behaviors was effective for decreasing disruptive behaviors.Treatment was evaluated in an extended analysis using a reversal design that included modification of task demands to incorporate easy and difficult tasks and providing breaks and assistance when requested by the participant. The intervention successfully decreased disruptive behavior when compared to baseline during which the participant's disruptive behavior was either redirected or ignored. Also noted were increases in appropriate behaviors. Furthermore, the effects of treatment maintained

several months following the intervention and prevented placement in a more restrictive setting. Most importantly, the teachers and teachers' aides implemented the assessment procedures and interventions, thereby enhancing the scope of external validity.

Limitations of Umbreit's (1995) study included conducting the functional analysis conditions in the classroom but away from other students, thereby limiting the stimulus conditions that may have influenced the problem behaviors. Other limitations included the use of just one participant, thereby limiting the scope of external validity. Nevertheless, results seem promising for use of functional analysis in designing interventions for decreasing disruptive behaviors while also consequently increasing appropriate behaviors.

Boyajian et al. (2001) conducted BFA and implemented function-based interventions to decrease disruptive behaviors in preschool children who were identified as being at risk for Attention Deficit Hyperactivity Disorder. The participants were three boys, ranging from four to five years of age who exhibited disruptive behaviors (e.g., aggression and non compliance) in preschool classrooms. FBA methods included teacher interviews and functional analysis. BFAs were conducted using a brief multi-element design with contingency reversals. Analyses indicated that disruptive behaviors were maintained by different functions (i.e., access to attention, access to tangible, escape from task demands) across children. The interventions were implemented by both the researchers and teachers and resulted in reduction in problem behaviors with concomitant increases in appropriate behaviors for participating children. The researchers concluded that BFA may be sensitive to the function of children's problem behaviors in general

education preschool classrooms. Additionally, function based interventions may be effective for reducing children's disruptive behaviors.

The limitations of the study by Boyajian et al. (2001) included not having the teachers conduct the BFA, thereby limiting the extent to which the identified reinforcer generalized to the intervention phase. Furthermore, the teachers were included in the intervention implementation for only two out of three participants in the second half of the intervention, thus limiting the scope of external validity.

Studies using DRO procedures.

While the studies outlined above have shown treatment effects with the use of function-based DRA procedures, DRO procedures have also been shown to be effective with young children. Cowdery, Iwata and Pace (1990) used functional analysis (i.e., demand, attention, play, alone with toys and alone conditions) to assess the function of severe SIB in a 9 year-old boy of typical development. SIB was mostly found to occur during the alone condition suggesting an automatic reinforcement function. Fixed interval DRO procedures were implemented in combination with tokens and social reinforcement for the absence of SIB. DRO interventions included varying the interval and session lengths. SIB gradually decreased during treatment to include longer intervals and session lengths (i.e., 2 min intervals to 30 min intervals of no SIB with session lengths lasting for all waking hours). Furthermore, DRO with the use of tokens was found to be more effective than DRO with social reinforcement. The study by Cowdery et al. has implications for decreasing inappropriate behaviors through use of DRO function-based interventions for decreasing inappropriate behaviors. Unfortunately, as a result of using a

DRO procedure, which does not teach a replacement behavior, the authors failed to report any increases in appropriate replacement behaviors.

Dufrene et al. (2007) conducted comprehensive functional assessments with three preschool students in the classroom. The comprehensive functional assessments included teacher interview (i.e., Functional Assessment Informant Record for Teachers – Preschool Version [FAIR-T P; Dufrene et al., 2007]), direct-descriptive assessment, and an abbreviated functional analysis (i.e., one datum per condition with no control condition). Additionally, function-based interventions were implemented by teachers and researchers and evaluated with an ABAB design. Participants were three, five-year old preschool children, who did not have any developmental disabilities. Two participants exhibited aggression (e.g., hitting, pushing), and one participant exhibited noncompliance (e.g., failed to initiate compliance in 5 s or complete compliance in 10 s). The descriptive assessment and abbreviated functional analysis identified access to attention as a maintaining variable for the two students exhibiting aggression while escape from adult instructions was identified as the maintaining variable for the student exhibiting noncompliance. The functional analysis conditions included access to attention, escape from task demands and an access to tangible conditions. Intervention included presentation of the functional reinforcer contingent on the absence of the target behavior and withholding of the functional reinforcer contingent on the occurrence of the target behavior. Abbreviated functional analyses were conducted by researchers while the interventions were implemented by researchers and teachers. Implementation of function-based interventions resulted in substantial reduction in disruptive behaviors for both the researcher and teacher-implemented interventions.

Dufrene et al. (2007) concluded that the study had implications for the use of functional assessment procedures in Head Start and preschool classrooms in designing function-based interventions for students without developmental disabilities. Additionally, the study has added utility by using teachers of varying educational backgrounds (i.e., Associate Degree, Bachelor's Degree) for implementing interventions. Limitations of the study by Dufrene et al. (2007) included the use of an abbreviated functional analysis that did not include many of the experimental controls needed to increase internal validity (e.g., control condition, contingency reversal). Additionally, data were not collected for students' exhibition of appropriate replacement behavior, which limits statements regarding habilitative validity of intervention procedures. Regardless of those limitations, the study has implications for using functional analysis in a classroom setting in the presence of relevant stimulus conditions. The presence of all the stimulus conditions allows for accurate identification of the functional reinforcers that maintain the problem behavior and the manipulation of such variables to improve student outcome.

A comparison of differential reinforcement procedures.

LeGray, Dufrene, Sterling-Turner, Olmi, and Bellone (2010) conducted functional assessments that included teacher interviews and a BFA. An alternating treatments design with a verification phase was used to assess the effects of a modified DRA (i.e., Pre-teaching plus DRA), DRO and control conditions. The primary researcher conducted all FA conditions while the teachers implemented interventions. Participants were three children of typical development between the ages of four and six who attended Head Start and kindergarten. Target behavior was inappropriate vocalizations for all children.

Results of BFAs indicated that inappropriate vocalizations were maintained by attention for two children and by tangible for one child. Following FBA, individualized DRA and DRO procedures were developed based on results from the FBA. Following intervention implementation, results indicated that while both DRA and DRO procedures were effective in decreasing disruptive behaviors, additional treatment gains were reported for the DRA intervention. The author concluded that FBA procedures, as well as differential reinforcement procedures, have utility in general education classrooms for children without disabilities.

Limitations of the study by LeGray et al. included having the researcher and not the teacher conduct the BFA, thereby limiting the stimulus conditions that may be influencing the problem behaviors. Additionally, the authors noted that target behaviors for all three participants belonged to the same response class, namely inappropriate vocalizations. It is not clear if similar DRA procedures used would result in similar gains for other topographies of behavior. Finally, data were not available regarding the extent to which interventions increased appropriate replacement behaviors.

Classwide Functional Assessment

Several authors have used groups as a unit of analysis for the purpose of identifying teacher behaviors that may be associated with childrens' compliance but did not include a treatment component (Atwater & Morris, 1988; Hoier, McConnell &Pallay, 1987). To date, one study has included a classwide descriptive assessment to identify functional variables to design treatment for the class (VanderHeyden et al., 2001). Another recent study by Hanley, Heal, Tiger, and Ingvarsson (2007) used previous literature on teacher behaviors associated with behavioral outcomes to help design a

classwide training program. However, the authors did not include a functional analysis to assess behavioral functions of the problem maintaining variables.

VanDerHeyden et al. (2001) conducted descriptive assessments in Head Start and daycare classrooms using the class as the unit of analysis. Descriptive assessments included teacher interviews and direct-observations with conditional probability assessments to identify the potential maintaining variables for the class's disruptive behavior. FBA results indicated that the class's disruptive behavior was maintained by access to attention. The assessment-indicated intervention included teacher attention for appropriate behavior (i.e., DRA) and extinction for disruptive behavior (i.e., ignoring). The contraindicated intervention included reprimands for disruptive behavior. The Head Start classroom included children without disabilities while the daycare classroom included children with speech and language delays and developmental disabilities. Target behavior for the study was disruptive behavior (i.e., out of seat, tantrum behavior, aggression). An alternating treatments design was used to evaluate assessment indicated and contraindicated treatments. DRA, or providing attention contingent on appropriate behavior (i.e., indicated treatment), resulted in a classwide reduction in disruptive behavior. VanDerHeyden et al. (2001) concluded that the relative effectiveness of the indicated intervention points to the usefulness of functional assessment procedures, utilizing the class as the unit of analysis, in preschool classrooms for children with and without developmental disabilities.

The limitations to the study by VanderHeyden et al. (2001) included the lack of a verification phase (i.e., a functional analysis) to demonstrate experimentally the function of the class's disruptive behavior. Other limitations included having the researchers and

not the teachers implement the procedures, thereby providing limited evidence of the extent to which these interventions may be implemented in natural settings. Furthermore, there were no data provided regarding concomitant increases in appropriate replacement behaviors, thereby limiting evidence for the habilitative validity of intervention procedures.

Poole (2009) conducted a functional assessment using teacher interview, direct observations and functional analysis, using the class as a unit of analysis. The study included teachers implementing functional analysis conditions and function-based interventions in two Head Start classrooms using the class as the unit of analysis. An ABAB reversal design was used to evaluate assessment-indicated (i.e., DRO) and contraindicated treatments.Both Head Start classrooms included children without disabilities. Target behavior for the study was disruptive behavior (e.g., off task, inappropriate vocalizations, inappropriate touching and throwing objects). For Classroom 1, attention was identified as a reinforcer for the class's disruptive behavior. An intervention that included attention was provided contingent upon the absence of disruptive behavior (i.e., DRO), which successfully decreased disruptive behaviors for Classroom 1. For Classroom 2, escape was identified as the reinforcer for disruptive behavior. Subsequently, an intervention that included breaks for the absence of disruptive behavior was effective for decreasing the class's disruptive behavior for Classroom 2.

Poole (2009) concluded that the relative effectiveness of the indicated intervention points to the usefulness of functional analysis procedures, utilizing the class as the unit of analysis, in preschool classrooms for children without developmental

disabilities. Furthermore, teachers were used to implement both the functional analysis and intervention sessions, thereby extending its utility to natural settings. The primary limitation of the Poole study was that data were not provided regarding the extent to which intervention improved appropriate behavior. As a result, data regarding the habilitative validity of the intervention procedure is limited. Additionally, Poole indicated that future research might identify the impact of class-wide function-based DRA procedures.

Purpose

As stated previously, a substantial number of preschool children exhibit disruptive behaviors. Disruptive behavior in early childhood may lead to more serious problems in later years. Therefore, it is important that researchers continue to develop assessment and intervention procedures for preschool students exhibiting high incidence behavior problems. Additionally, teachers may not be equipped to deal with disruptive behaviors in young children. Although there is a vast amount of FBA literature, most studies focus on severe behaviors (e.g., SIB) or on children with developmental disabilities. Relatively fewer FBA studies focus on preschool children who are typically developing. (Boyajian et al., 2001; Dufrene et al., 2007; Kamps et al., 1995; VanDerHeyden et al., 2001). Additional studies would certainly benefit the literature base on FBA with preschool children.

VanDerHeyden et al. (2001) conducted direct-descriptive assessments in Head Start classrooms with the class as the unit of analysis. Results indicated that direct-descriptive data were useful for identifying a class-wide intervention that successfully decreased the class's disruptive behavior. No data were provided regarding concomitant

increases in appropriate behavior. Poole (2009) conducted a classwide functional analysis and designed interventions to decrease disruptive behaviors using the class as the unit of analysis. Both the assessment and intervention used teachers to implement the procedures. A function-based treatment using DRO procedures was implemented and resulted in substantial reductions in children's disruptive behavior. Unfortunately, Poole also failed to report data regarding concomitant increases in appropriate behaviors.

With regard to efficiency of assessment and intervention procedures, preschool classrooms may include multiple students in need of assessment and intervention services. Conducting individual assessments and developing individualized interventions may be too time consuming when multiple children in one classroom are in need of services. Therefore, it may be important to evaluate the extent to which functional assessment procedures can be used to identify effective group contingency interventions in preschool classrooms. Moreover, Solnick & Ardoin stressed the need for further research in functional analysis procedures that would result in effective classwide interventions because all classrooms may not respond to non-function-based group contingencies (Reitman, Murphy, Hupp, & O'Callaghan, 2004) due to differences in the function of the class's behavior. As a result, the purpose of this study is to extend Poole (2009) by conducting BFAs in preschool classrooms, developing classwide function-based DRO and DRA interventions and evaluating relative effects on disruptive and appropriate replacement behaviors.

Research Questions

1. Is a BFA effective in determining behavioral function for the class's disruptive behavior?

2. Which intervention, DRO or DRA, will result in greatest decreases for the class's problem behaviors?
3. Which intervention, DRO or DRA, will result in greatest increases in the class's appropriate behaviors?

CHAPTER III

METHOD

Participants and Setting

Two kindergarten classrooms and one Head Start classroom in a midsize town in the southeastern United States were included based on the following criteria: (a) multiple children had been referred by the teacher for consultation because of disruptive classroom behaviors; (b) disruptive behavior was frequent and observable; and (c) direct-observation data indicated disruptive classroom behavior occurred during 20% or more of the observed intervals during a screening observation. Additionally, teacher informed consent was obtained for each classroom (see Appendix A). Classroom 1 was a kindergarten classroom with 23 children, ranging in age between five and six years, with at least six children who were referred for disruptive behavior. Thirteen children were Caucasian, and seven were African-American. Approximately 79% of the children in the school received free and reduced lunches. Four children were diagnosed with ADHD with three receiving medication for ADHD. One child received special education services for Developmental Delay, and three received services under the category Speech/Language. All children were included in the analysis. Classroom 2 was a Head Start classroom with 17 children between the ages of three and four years. All the children in Classroom 2 were of African American descent and received free and reduced lunch. There were four children who were referred for consultation due to disruptive behavior. There was one child with cerebral palsy/moderate to severe developmental delay who received speech therapy and physical therapy. Seven other children received speech therapy, and one girl had severe behavior problems as reported by the teacher.

The child with cerebral palsy/developmental delay was excluded from the study because he was not able to sit and sustain attention for extended periods of time. Classroom 3 was a kindergarten classroom with 29 children with eight children who were referred for consultation due to disruptive behavior. All the children were African American with the exception of two who were Caucasian and one who was Hispanic. All children received free and reduced lunch. Two children received speech therapy, and one child was classified as a special education student (category unknown). Two children received medication for ADHD. All children in Classroom 3 were included in the study.

Teacher demographic information was collected for each classroom following participant recruitment (see Appendix B). The teacher in Classroom 1 held a bachelor's degree in elementary education, and had 3 years experience teaching second and third grades and 6 months experience in her current kindergarten classroom. She reported attending two workshops on classroom management. The primary teacher in Classroom 2 held a master's degree in early childhood education and leadership with a bachelor's degree in childcare and family studies. She had 32 years experience in child care and teaching and reported receiving training in direct instruction for early literacy as part of their job specific training and two hours of behavior management lessons through the agency that managed her Head Start Center. The primary teacher in Classroom 2 was out for a week due to extenuating family circumstances and unable to implement the intervention during the first DRO intervention session (indicated with an arrow); therefore, the assistant teacher was trained to implement the intervention in her absence. The Assistant teacher in Classroom 2 held an Associate's degree and had 2 years experience in child care. The primary teacher in Classroom 2 returned to school and

implemented the remainder of the intervention sessions. The teacher in classroom 3 was completing her Master's degree in early literacy. She held a bachelor's degree in elementary education and had 3 years experience in teaching. She reported taking an undergraduate psychology course in general classroom management as part of her degree requirements. The assessment conditions were conducted in each classroom during direct instruction with the exception of the control condition that was conducted during an unstructured activity (e.g., during work centers or journal writing).

Materials

Functional Assessment Informant Record for Teachers Pre-school Version (FAIR-T P).

The FAIR-T P (Dufrene et al., 2007; see Appendix C) was administered to teachers to identify and operationalize target behaviors for the class, as well as to generate hypotheses concerning the function of problem behaviors in the classroom. The FAIR-T P is a modified version of the FAIR-T (Doggett, Edwards, Moore, Tingstrom, &Wilczynski, 2001; Edwards, 2002) that is more suited to the demands, expectations and situations present in center-based classrooms. The FAIR-T P consists of four sections: (a) demographic data and information about compliance, work completion and accuracy of work; (b) identification and description of problem behavior in order of severity; (c) antecedent events; and (d) consequent events. Studies have shown that the hypotheses generated from the original FAIR-T correspond with the functions identified in experimental analyses and descriptive assessments (Doggett et al., 2001; Anderson, 2008; Moore, 2002) and are useful for treatment planning. Similarly, there is preliminary evidence to suggest that the FAIR-T P corresponds with other functional assessment procedures and may be useful for treatment planning (Dufrene et al., 2007; LeGray et al.,

2010). The FAIR-T P was modified in the study such that information was gathered for the entire class as opposed to one child. For example, instead of asking the teacher to identify target behaviors for individual children and antecedents and consequences for behaviors of individuals, the researcher solicited information regarding the entire class. Previous research (Poole, 2009) indicates that the FAIR-T P may be appropriate for use with the entire class as results matched those obtained from experimental analyses and were useful for treatment planning.

Assessment Rating Profile-Revised (ARP-R).

A modified version of the ARP-R (Eckert, Hintze, & Shapiro, 1999) was used to evaluate teacher satisfaction with BFA procedures. The ARP-R (see Appendix D) was developed to evaluate consumer acceptability of assessment procedures. The ARP-R was modified for the study by changing the tense from present to past and the word "school psychologist" changed to "teacher." The ARP-R is a 12-item Likert scale and reflects a one-factor model of "General Assessment Acceptability" (Eckert et al., 1999). The ARP-R incorporates a six point Likert scale with responses ranging from 1 (strongly disagree) to 6 (strongly agree) with higher scores indicating a greater level of acceptability. Scores on the ARP-R may range from 12 to 72. The ARP-R has adequate internal consistency (Cronbach alpha coefficients ranging from .94 to .99), test-retest reliability (ranging from .82 to .85) and improved construct validity when compared to the original ARP (Eckert et al., 1999).

Intervention Rating Profile-15 (IRP-15).

Each classroom teacher completed a modified version of the Intervention Rating Profile-15 (IRP-15; Martens, Witt, Elliott, &Darveux, 1985) for each intervention at the

conclusion of the study (see Appendix E). The IRP-15 was modified such that the future tense items were changed to past tense. Previous research indicates that such modifications do not negatively impact psychometric properties of the instrument (Freer & Watson, 1999). The IRP-15 is composed of 15 questions that the respondent rates on a Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). Ratings range from a total score of 15-90, where a total score above 52.5 represents a rating of "acceptable" (Von Brock & Elliott, 1987). The IRP-15 is a reliable instrument with strong internal consistency (Cronbach alpha = .98) and all factors load on a general acceptability factor (ranging from .82 - .95; Martens et al., 1985).

Dependent Variables and Response Measurement

The class's disruptive behavior (i.e., out of area, playing with objects, inappropriate vocalization, and off-task behaviors) served as the primary dependent variable for this study and was reported as the percentage of intervals (See Appendix F) in which the response class occurred. The response class of disruptive behavior was operationally defined based on interviews with participating teachers. Disruptive behaviors were different across classrooms with out of area, inappropriate vocalization and off-task behaviors for Classroom 1 and 3 and off-task behaviors, inappropriate vocalizations and playing with objects for Classroom 2. Out of area was defined as not having any part of the body in the assigned area. Inappropriate vocalizations were defined as any task irrelevant audible noise by a child (e.g., talking-out, humming and screaming). Off-task behavior included breaking eye contact from the current task for three or more seconds to engage in another behavior. Playing with objects was defined as manipulation of items that are irrelevant to the task at hand. A 10 seconds continuous

partial-interval recording system was used for all observations, including the screening observation. Session length was 20minutes across all phases of the study and is further described in the Procedures section.

Appropriate replacement behaviors were also recorded and defined based on teacher interview. Appropriate replacement behaviors were slightly different for all three classrooms and defined as follows: For Classroom 1 appropriate behaviors included raising their hands to answer/ask a question, raising one finger to request use of bathroom and raising two fingers to request a tissue. For Classroom 2, appropriate behaviors included raising hand if someone was bothering them, if they did not understand what the teacher was saying or they had a question. For Classroom 3, appropriate behavior included raising hand if a child wanted to answer/ask a question. (See Appendices G, H, & I)

Throughout the functional analysis and intervention sessions, two researchers independently but simultaneously recorded the level of problem behavior that occurred. Observations were conducted using a 10 seconds continuous partial-interval recording procedure. The observers were cued by an audiotape every 10 seconds to record the occurrence of the problem behavior, as well as appropriate behavior. Observation procedures slightly varied between the Headstart and kindergarten classrooms. The rationale for observing multiple children throughout the duration of the session was to obtain an adequate representative sample of the class's behavior. Specifically, for the Headstart classroom, the children were divided into two small groups (i.e., 7 to 10 in each group) with each group being observed for 10 minutes. Researchers began observing with the first child who was seated to the teacher's right during direct instruction, and each

child was observed for 10 seconds (i.e., one interval) before proceeding to the next child. Observers rotated through children in this manner throughout the duration of the 20-minute observation session. The first group was observed by rotating through children until that group completed direct instruction. When the first group was finished with instruction (i.e., 10 minutes observation), observers paused the observation until the second group of students transitioned into direct instruction (i.e., for the next 10 minutes) to continue with their observations. Therefore, observation sessions lasted a total of 20 minutes for the entire class with each group being observed for 10 minutes. For the kindergarten classroom, observation procedures were identical except for the fact that the entire class was observed for a total of 20 minutes without having to pause the tape between observations because they were not divided into groups.

This method of observing each child for 10 seconds was an improvement with regard to obtaining a better sample of the class's behavior when compared to the Poole (2009) study where each child was observed for 30 seconds before proceeding to the next child.

Experimental Design

A brief multi-element design with a contingency reversal phase was employed for the BFA based on the procedures described by Boyajian et al. (2001). The conditions were modified to incorporate the whole class as a unit of analysis. Following the BFA, a treatment evaluation phase was conducted using an ATD with a verification phase. The ATD included three conditions, DRA, DRO, and a control condition. The class experienced conditions in a rapidly alternating sequence in semi-random fashion. Specifically, the researcher wrote the conditions on pieces of paper and drew a condition

each day. Semi-random exposure included not having one condition implemented on more than two consecutive days.

Independent Variables

Independent variables for the BFA included access to teacher attention, escape from academic task and access to a preferred activity made contingent on a child exhibiting disruptive behavior. Access to attention included providing three brief verbal reprimands contingent upon occurrence of the problem behavior. Escape from task demands included temporary termination of the current task demand (e.g., discontinuing direct instruction for 30 seconds) contingent on the occurrence of disruptive behavior by a student that was being observed by the researchers. Access to an activity included 30 seconds of access to a preferred activity (e.g., singing songs in an unstructured format as occurring in the natural environment) contingent upon occurrence of the problem behavior (see BFA section under Procedures for details of each BFA condition).

Procedures

Teacher Interview.

The primary researcher (i.e., author) interviewed each classroom teacher using the FAIR-T P. The FAIR-T P was administered in a semi-structured interview format to gather pertinent information about problematic behaviors and to facilitate the development of the operational definitions for the target behaviors. Moreover, the teacher was asked to provide one to three appropriate replacement behaviors that she would like to see the class exhibit. Finally, information was gathered regarding antecedents and consequences for problem behaviors based on the teachers' perceptions. An independent researcher used the FAIR-T checklist to identify the function of the

problem behavior (see Appendix J). All teacher interviews were conducted in a quiet location during a convenient time for participating teachers.

Direct-descriptive assessment observation.

One screening observation was conducted for each of the participating classrooms to determine if the class met criteria for the study and to validate the information obtained from the FAIR T P. The observation was conducted in the classroom during direct instruction time. The observation time and setting was selected based on the teacher interview (FAIR T P) as the most problematic setting/time. Observers manually recorded the occurrence of disruptive and appropriate behaviors using a ten-second continuous partial-interval tape that cued observers to record disruptive and appropriate behaviors as outlined above. The consequences for the behaviors (i.e., attention, escape and tangible) were recorded as well. The observations were conducted by the primary researcher and/or another graduate student. Graduate students were previously trained through a school psychology training program. The observers were unaware of the results from the teacher interview (i.e., the hypothesized function from the FAIR T P).

Brief functional analysis.

The BFA was conducted in each classroom by the teachers during direct instruction for early literacy (e.g., initial sounds, phoneme segmentation). The BFA was used to test all four conditions (i.e., control, escape, attention, and activity) in a randomized order using a brief multi-element format. Specifically, the primary researcher wrote each condition on a slip of paper, placed the slips of paper on the desk, and had the teacher select conditions one at a time until all conditions were drawn to determine the order of implementation. Randomization occurred in this manner for all three

classrooms. Each condition was 20 minutes in duration, and a two-minute break occurred between conditions when two conditions were conducted in a day. The BFA conditions were completed in three days, with each experimental condition occurring in one day during direct instruction with the exception of the control condition that was conducted after direct instruction time. The contingency reversal was conducted with each condition occurring once per day. A description of each condition follows:

Control condition.

During the control condition, the class was engaged in an unstructured activity (e.g., playing or working on their projects, journal writing or working on the computer [see Appendix K for protocol]). No direct instruction occurred during this time. The teacher delivered neutral attention (e.g., "That is a blue bird.") at least every 30 seconds. All disruptive behaviors were ignored and the teacher remained in close proximity (i.e., two to three feet) to the class.

Escape condition.

During the escape condition (See Appendix L), the class received a break from direct-instruction contingent upon disruptive behavior by a student who was being observed by the researchers. Specifically, the teacher terminated direct-instruction for 30 seconds by saying, "Class, you are being disruptive; let's take a break," and slightly turned her head from the students. During this time, no attention or access to alternate activities or preferred items were provided. Following the 30-second escape period, the teacher resumed presentation of direct-instruction.

Attention Condition.

During the attention condition (See Appendix M), the class was again seated in their chairs and direct instruction continued as normal. The teacher ignored all appropriate behaviors. When a child engaged in a problem behavior, the teacher delivered three brief verbal reprimands (e.g., “Stop doing that,” “Stop hitting,” “You’re not supposed to do that”) and continued direct instruction. No other contingencies were provided during the attention condition.

Activity condition.

Duringthe access to activity condition (See Appendix N), the teacher had the class sing and dance to a preferred song for a period of 30 seconds immediately prior to the beginning of direct instruction. When direct instruction began, and consequently the activity condition, the teacher discontinued singing the song and began direct instruction. Contingent upon disruptive behavior by a student being observed by the researcher, the song was resumed for 30 seconds. After 30 seconds had elapsed, the teacher again stopped the song and resumed direct instruction. This process was repeated each time the problem behavior occurred. It is important to note that this condition is unique and not consistent with functional analysis tangible/activity conditions used in previous studies. This modification is deemed necessary due to use of the class as the unit of analysis (i.e., the contingency had to be delivered or withdrawn at the same time), thereby making the use of tangibles time-consuming and cumbersome.

Contingency reversal phase.

This phase was used to validate the functional relation between the target behavior and the independent variables (Boyajian et al., 2001). A BAB reversal design was used to see if the reversal of the contingency that produced the highest level of

problem behaviors decreased the target behavior. In the first and third sessions (condition B), the contingency that produces the highest level of problem behavior (e.g., attention, escape, activity) was provided for every 30 seconds of the nonoccurrence of the target behavior (i.e., DRO). In the second session (Condition A), the same contingency was provided for the occurrence of the problem behavior, thereby replicating the session that produces the highest level of problem behaviors during the BFA. Additionally, reinforcement was not provided contingent upon appropriate behavior. For Classroom 1, the BFA was undifferentiated, so an extended analysis was conducted with the three conditions that resulted in similar levels of disruptive behavior.

Teacher Training.

The primary teachers in all three classrooms were trained to implement functional analysis conditions as outlined by Moore et al. (2002). The training for all teachers occurred in the following manner: (a) training with protocol scripts, (b) modeling by researcher, (c) rehearsal of two randomized FA conditions (e.g., attention, escape) with performance feedback after each session. Following the teacher training of functional analysis methodology, procedural integrity was evaluated for each session. Following training, all teachers had to demonstrate 90% or greater procedural integrity in the rehearsal phase before beginning to conduct sessions with students. The teachers were evaluated on elements of antecedents, behaviors, and consequences in each condition. All functional analysis conditions, except the control condition, were implemented during direct-instruction to ensure that stimulus conditions were consistent across conditions.

BFA conditions were implemented by the teacher, with the primary researcher prompting the teacher with a prepared sign on a 5x7 index card. Teachers conducted

direct instruction in their typical manner while the researcher observed students' behaviors. Contingent upon student disruptive behavior, the researcher prompted the teacher to deliver the appropriate consequence (e.g., verbal reprimands) given the relevant BFA condition. For example, when a student engaged in disruptive behavior, the researcher held up an index card with the name of the appropriate condition (e.g., escape) to signal the teacher to implement the consequence.

Additionally, teachers were trained to deal with aggressive behavior by separating the aggressive child from the group. The children were placed in time-out for a period of one to two minutes or until calm. For all three classrooms, time out was implemented approximately six to eight times and lasted for approximately one to two minutes per time-out. For Clasrooms 1 and 3, time out included sitting away from the group, but in close proximity to the group where the children were able to observe the lessons. For Classroom 2, time-out included being seated close to the teacher with the chair turned around to where they could still hear the lesson.

Treatment Evaluation Phase.

Following the BFA, a treatment evaluation phase was conducted using an ATD design to compare function-based DRA and function-based DRO procedures. DRA and DRO conditions were based on procedures used by LeGray et al (2010). Additionally, a control condition was included to compare the effectiveness of the two treatments with no treatment.

The DRO condition included withholding the functional reinforcer following occurrence of disruptive behavior and providing reinforcement contingent on the non-occurrence of disruptive behavior every 30 seconds (i.e., attention in the form of praise

delivered every 30 seconds; see Appendix O). Additionally, the use of all appropriate replacement behaviors was ignored. The control condition included having the teacher conduct class in the usual manner prior to implementing the intervention. For both the DRA and DRO conditions, the researcher prompted the teacher to deliver the appropriate reinforcer, by holding up a 5X7 index card with the reinforcer (e.g., Praise) written on it.

The DRA condition included providing the functional reinforcer for an appropriate replacement behavior (e.g., "Good job raising your hand to ask a question, "Thank you for doing that, that lets me know that you want to say something.") exhibited by any student in the class (see Appendix P). The teacher reinforced the first instance of any appropriate replacement behavior that occurred after a 30-second absence of inappropriate behavior. Prior to the beginning of each DRA session, the teacher conducted a pre-teaching session that targeted the appropriate replacement behavior or response class selected by the teacher.

Pre-teaching included informing the class of an appropriate replacement behavior (e.g., raise your hand if you need to ask a question) or response class (e.g., appropriate requests for attention) of appropriate replacement behaviors based on the information gathered from the teacher interview. The training took place before beginning each DRA condition. Training included reminding, demonstrating, practicing and giving feedback (e.g., "What do you do when you have a question? You will raise your hand and wait for me to ask you."). Training took place for approximately 2 to 3 minutes before starting direct instruction for the group.

For Classroom 2, the children were prompted to use their appropriate adaptive behaviors during the initial part of the intervention phase. Additional prompts were used

because this was a younger age group and the children did not already have the adaptive behavior in their repertoire. The teacher gradually reduced the level of prompting when the children began to spontaneously emit the appropriate adaptive behavior.

Upon identification of an effective intervention, a brief verification phase was conducted to assess the effectiveness of the intervention in isolation. The purpose of the verification phase was to minimize any treatment interference effects. Treatment sessions were 20 min in duration.

Interobserver Agreement (IOA)

The primary researcher trained graduate students in all data collection procedures. Observers were provided with operational definitions of the dependent variables and data collection sheets. The observers then accompanied the primary researcher in conducting classroom observations of the target classrooms participating in the study. When the graduate students obtained IOA of 90% or above during an observation/training, they were allowed to conduct observations independently.

Two observers were assigned to each classroom, one served as the primary data collector and the other, observer for IOA. Agreements were defined as both observers agreeing that the target behavior occurredor did not occur in a given interval. Agreement coefficients were calculated by dividing the total number of agreements by the number of agreements plus disagreements and multiplying by 100. For all classrooms, IOA data were collected for 47.9% of the BFA sessions and 38.8% of the intervention analysis sessions. Average IOA estimates for BFA sessions for Classrooms 1, 2 and 3 were 99% (range, 96.6%-100%), 96.8% (range, 95%-98.3%) and 97% (range, 95%-100%), respectively. Average IOA estimates for the intervention analysis sessions for Disruptive

behaviors were 96.8% (range, 91.7%-100%), 97.8% (range, 94.2%-100%), and 98.4% (range, 95.8%-100%) for Classrooms 1, 2 and 3, respectively. Average IOA estimates for the intervention analysis sessions for Appropriate behaviors were 94.8% (range, 90-98.3), 97.4% (range, 93.3-100) and 95.1% (range, 92.8-97.5) for Classrooms 1, 2 and 3, respectively.

For all classrooms, IOA data for procedural integrity (i.e., between observers) was also collected for 47.9% of the BFA sessions and 38.8% of the intervention analysis sessions. Average IOA estimates for BFA sessions for Classrooms 1, 2 and 3 were 100%. Average IOA estimates for the treatment integrity sessions were 96% (range, 90-100),98.6% (range, 91.6-100) and 95.1% (range, 90-100) for Classrooms 1, 2 and 3.

Procedural and Treatment Integrity

Procedural integrity data were collected for 100% of the functional analysis conditions. Procedural integrity was defined as the number of correctly implemented steps divided by the total number of steps and multiplied by 100 (see Appendix Q-T). Procedural integrity data were 100%, 98.9% (range, 92.8-100) and 100% for Classrooms 1, 2 and 3 for the BFA sessions, respectively.

Treatment integrity (See Appendix U-V) was evaluated for 100% of the sessions across the intervention phases (i.e., DRO and DRA) of the study. However, integrity data were not collected for the control condition. Treatment integrity was calculated similar to the procedural integrity and defined as the number of correctly implemented steps divided by the total number of steps and multiplied by 100. Treatment integrity data were 95% (range, 90-100), 97.3 (range, 91.6-100) and 93.6 (range, 90-100) for Classrooms 1, 2 and 3, respectively.

Data Analysis

Brief functional analysis/Extended analysis.

One datum per condition was collected during the BFA. Visual analysis was used to assess level. The BFA did not result in a clear difference between conditions for Classroom 1; therefore, an extended analysis, including the three conditions with higher levels of disruptive behavior was conducted. During the extended analysis, data were visually analyzed for level, trend, and stability.The condition that had the highest level of problem behavior was used to inform the contingency reversal phase for Classroom 2 and Classroom 3. The contingency was reversed in the contingency reversal phase to provide an added experimental demonstration of the functional relationship between a problem behavior and a particular reinforcer.

Treatment evaluation.

The data were analyzed using visual inspection of level, trend and stability of each condition across the ATD. Additionally, visual inspection was used to evaluate separation between conditions. Statistical analyses were also used to supplement visual analysis of the data because it may be difficult to get reliability between evaluators through visual analysis of data or to determine clear separation or treatment effects. Specifically, effect sizes were calculated using odds ratios to compare treatment with the control condition.

CHAPTER IV

RESULTS

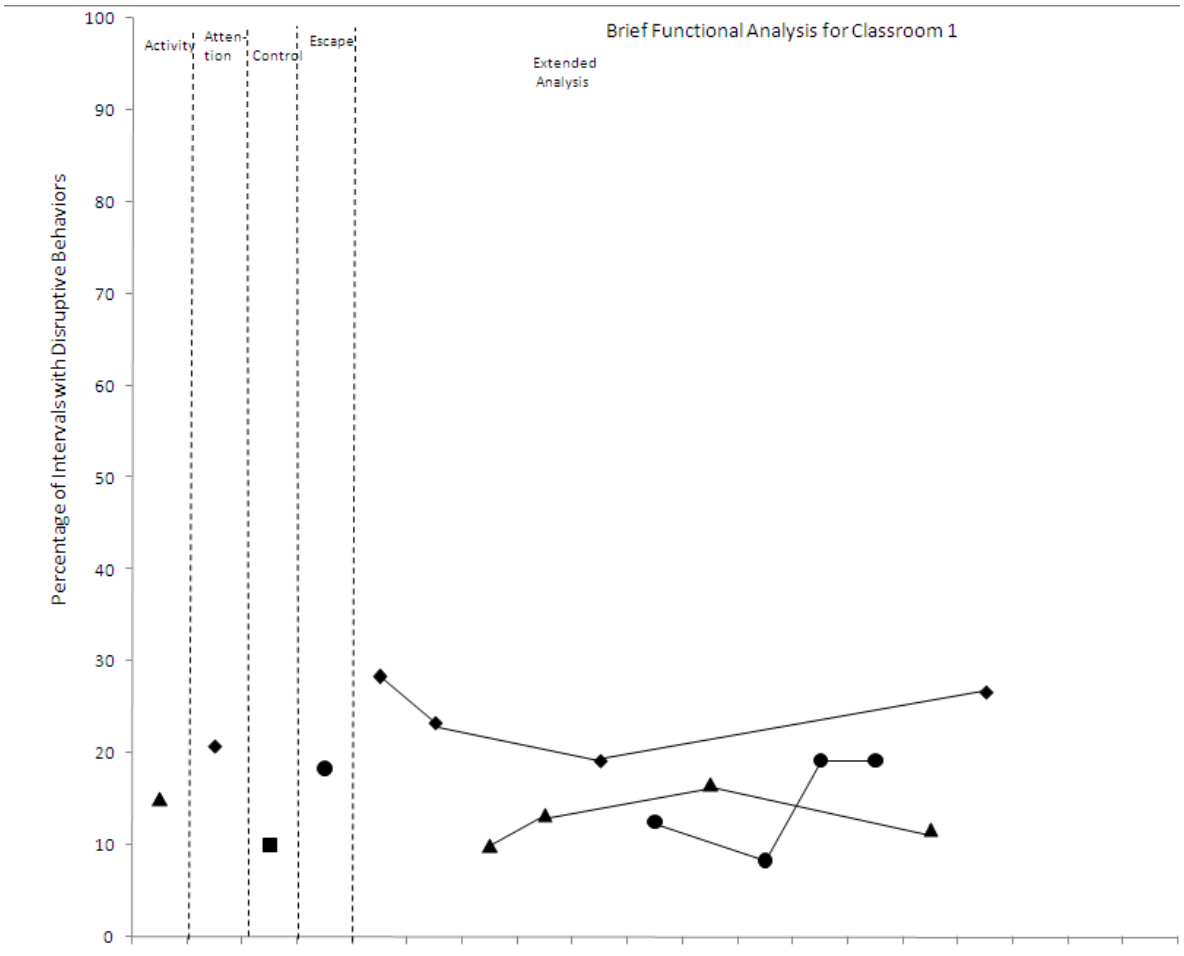
Classroom 1

During a direct-descriptive assessment observation, Classroom 1was observed to engage in disruptive behavior during 53.3% of the observed intervals. The direct-descriptive assessment observation also indicated that disruptive behavior was followed by attention 7.8% of the observed intervals, with escape and tangible following disruptive behavior 0% of the observed intervals. Therefore, it was hypothesized that the function of disruptive behavior was access to attention.

A BFA was implemented during direct instruction where children engaged in phonemic awareness instructional tasks. Results for the BFA are presented in Figure 1. For Classroom 1, disruptive behavior occurred during 15% of the observed intervals during the Activity condition, during 20.8% of the observed intervals during the Attention condition, during 10% of the observed intervals during the Control condition, and during 18.3% of the observed intervals during the Escape condition. Results of the BFA showed minimal differentiation between the attention and escape conditions with the activity condition following closely behind. Although the attention condition seemed to be slightly higher compared to the other two experimental conditions, the author was acting conservatively by conducting an extended analysis for these three experimental conditions. During the extended functional analysis, disruptive behavior occurred at higher levels during the attention condition with no overlap in data paths with the escape and activity conditions.Results from functional analysis identified attention as the maintaining variable for Classroom 1. The function of disruptive behavior matched the

function derived from the FAIR TP and the screening observation. Therefore, DRA and DRO interventions included manipulation of attention-based contingencies as the primary intervention component.

Figure1. Brief Functional Analysis for Classroom 1.



Intervention Analysis for Disruptive behaviors for Classroom 1.

Results from intervention analysis for Classroom 1's disruptive behavior are presented in Figure 2. For Classroom 1disruptive behaviors occurred during an average of 33.4% of the observed intervals (range, 22% to 40.8%) for the control condition, an average of 24.6% of the observed intervals (range, 15% to 30.8%) for the DRO condition,

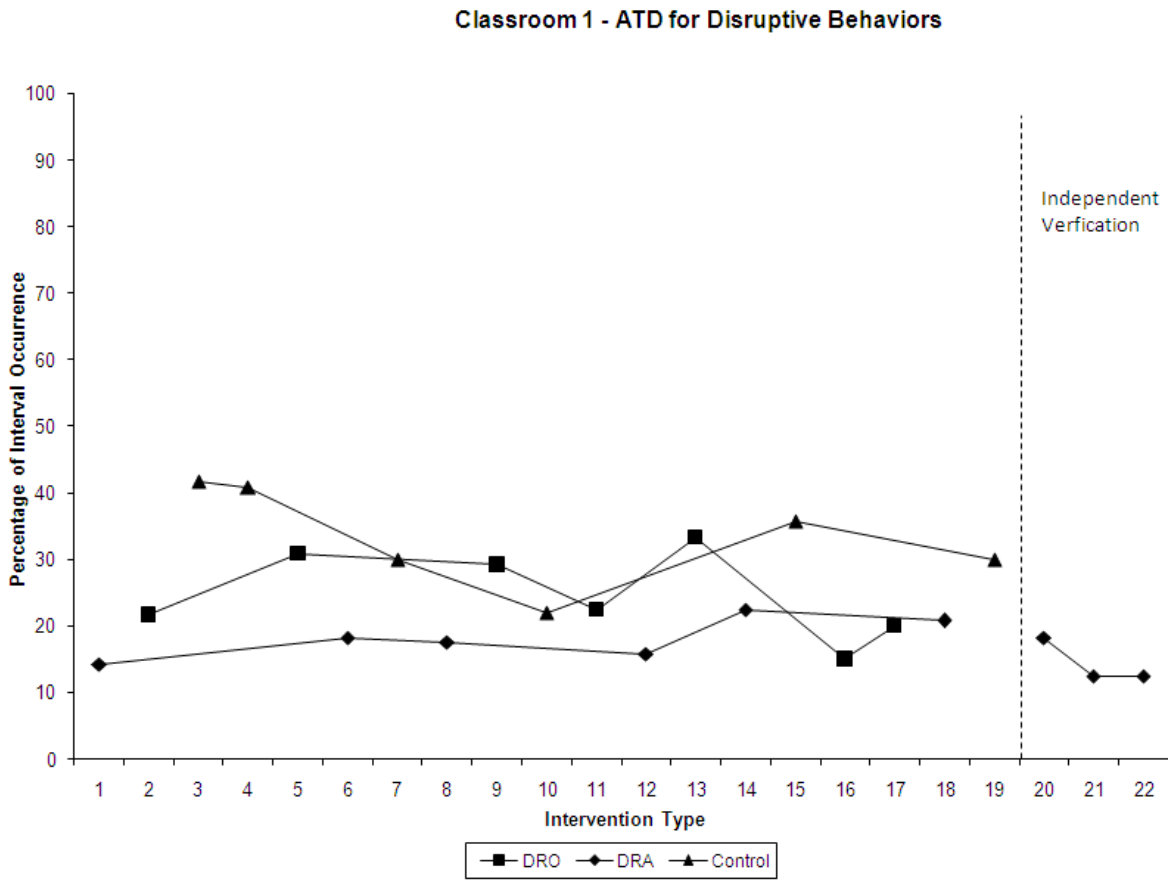
and an average of 18.2% (range, 14.2%-22.5%) of the observed intervals for the DRA condition. There was greater separation and vertical distance between the control and DRA condition but considerable overlap between control and DRO intervention. Also, there was a more moderate level and variability observed across the DRO sessions while there was a low level and stability observed for the DRA intervention. Additionally, the majority of the data paths did not overlap between the DRO and DRA interventions except for the last two data points. Therefore, the DRA intervention was manipulated during the independent verification phase to minimize treatment interference. During the verification phase, Classroom 1's disruptive behaviors occurred during an average of 14.4% (range, 12.5%-18.3%) of the observed intervals, ending in a downward trend and maintaining at a stable low level.

Intervention Analysis for Appropriate behaviors for Classroom 1.

Results from intervention analysis for Classroom 1's appropriate behaviors are presented in Figure 3. For Classroom 1, appropriate behaviors occurred during an average of 23.5% (range, 16.7%-30.8%) of the observed intervals during the control condition, an average of 18.1% (range, 12.5%-25.8%) of the observed intervals during the DRO intervention, and an average of 31.9% (range, 29.2% -40%) of the observed intervals during the DRA intervention. With regard to the control condition and intervention, there was clear separation between the control condition and DRA condition with the exception of two overlapping data points. However, there was minimal separation observed between the control condition and DRO intervention. With regard to differences between interventions, there was clear separation and vertical distance between the DRA and DRO intervention, ending in opposing trends.Overall, the DRA intervention showed

moderate to high levels of appropriate behaviors with a stable trend while the DRO intervention maintained at a low level with an ascending trend.

Figure 2. Intervention Analysis for Disruptive Behaviors for Classroom 1.

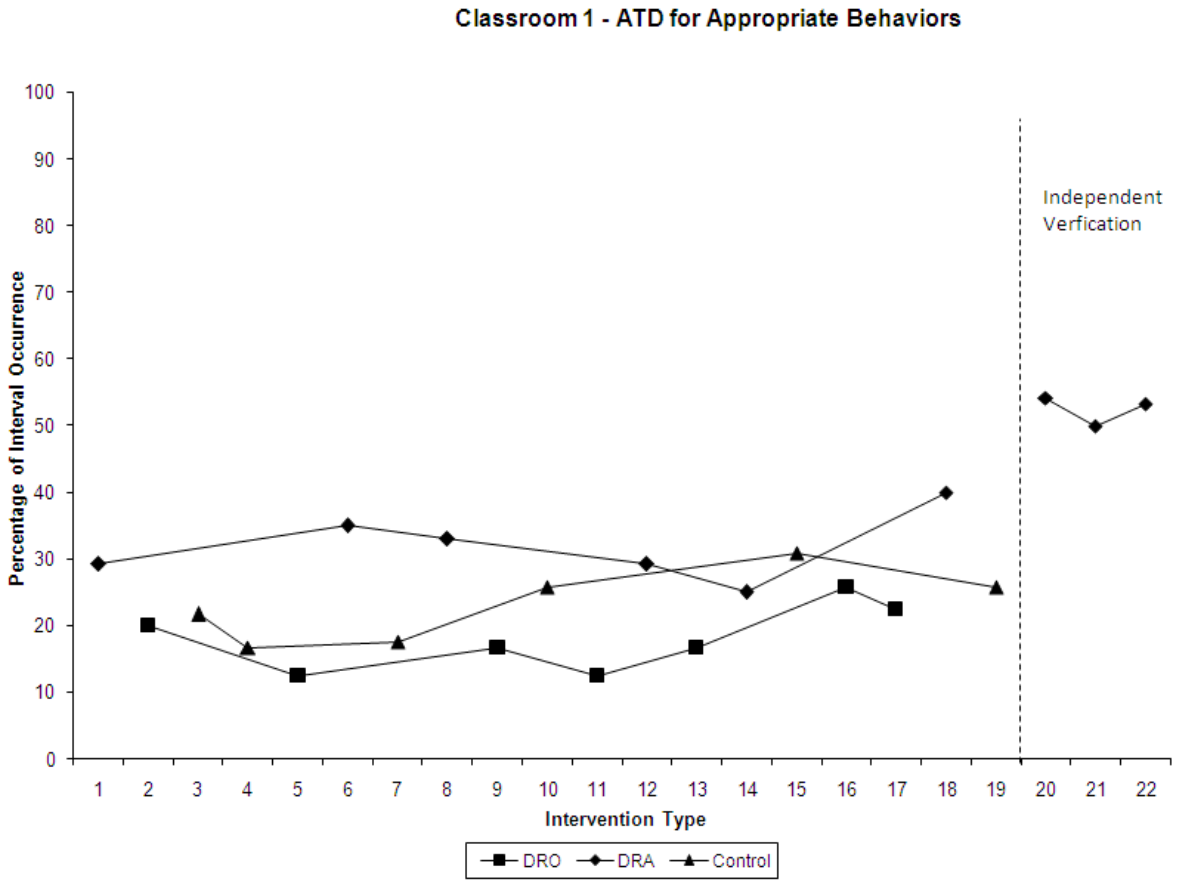


Anecdotal information revealed that the increasing trend for the control condition in the fourth and fifth sessions may have been due to the fact that the teacher started to use praise for appropriate behaviors similar to the DRA intervention. Following the fifth session, the teacher was prompted to conduct class similar to how she conducted class prior to being trained on the intervention, which resulted in a downward trend during the last control session. During the independent verification phase, Classroom 1's appropriate behaviors occurred during an average of 52.5% (range, 50-54.1) of the observed intervals, with a much higher level and stability.

Classroom 2

During a direct-descriptive assessment observation for Classroom 2, disruptive behavior occurred during an average of 31.7% of the observed intervals. The screening observation also indicated that disruptive behavior was followed by attention 10.5% of the time and by escape and tangible 0% of the time. Therefore, it was hypothesized that the function of disruptive behavior was access to attention.

Figure 3. Intervention Analysis for Appropriate Behaviors for Classroom 1.



Brief Functional Analysis for Classroom 2.

A BFA was implemented during direct instruction (i.e., phonemic awareness) where children engaged in learning activities to identify and label parts of an object and recognize quantity (e.g., the glass is full or empty). Results for the BFA for Class 2 are

presented in Figure 4. For Classroom 2, disruptive behavior occurred during 27.5% of the observed intervals during the attention condition, 18.3% of the observed intervals during the Escape condition, 15% of the observed intervals during the Activity condition, and 1.7% of the observed intervals during the Control condition. Based on these results, access to teacher attention was identified as the maintaining variable for the class's disruptive behavior. Therefore, access to attention was verified in the contingency reversal phase. During the first contingency reversal, the class's disruptive behavior occurred during 31.7 % of the observed intervals. When the contingency was restored, the class's disruptive behavior occurred during 25.8% of the observed intervals. Finally, during the second contingency reversal, the class's disruptive behavior occurred during 24.2% of the observed intervals. Results from the BFA indicated access to social attention as the maintaining variable for the class's disruptive behavior although the contingency reversal failed to experimentally validate results from the initial BFA. Failure of the contingency reversal to result in substantially decreased disruptive behaviors may have been due to children's limited exposure to the contingency reversal.

In other words, contingency reversal operates in a similar manner to intervention, and children may not have been exposed to the procedures for enough time for the manipulation to substantially reduce disruptive behavior. Nevertheless, the primary intervention manipulation was attention due to the fact that there was replication of disruptive behaviors in the second Attention condition. Additionally, the function of disruptive behavior matched the function derived from the FAIR T P and the screening observation. Therefore, DRA and DRA interventions included manipulation of attention contingencies as the primary intervention components.

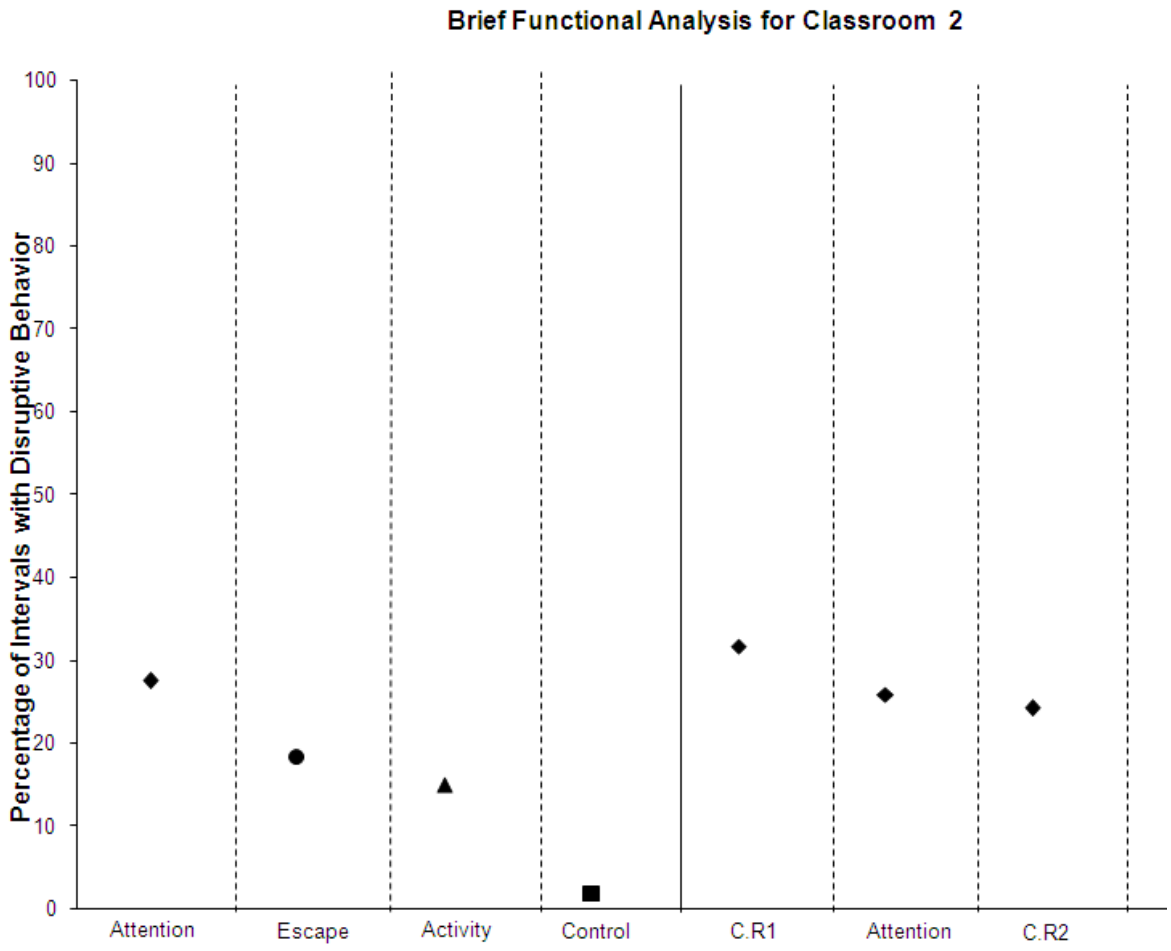
Intervention Analysis for Disruptive behaviors for Classroom 2.

Results from intervention analysis for Classroom 2's disruptive behavior are presented in Fig 5.For Classroom 2, disruptive behaviors occurred during an average of 36.6% of the observed intervals (range, 34.1%-41.6%) during the control condition, an average of 10% of the observed intervals (range, 7.5%-11.8%) during the DRO condition, an average of 16.1% (range, 13.3%-20.8%) of the observed intervals during the DRA condition.

There was clear separation and great vertical distance between the control condition and the two interventions (i.e., DRO and DRA interventions). With regard to differences in interventions, there was minimal separation between the DRA and DRO intervention with slightly opposing trends observed in the data paths. Overall, both interventions resulted in low levels of disruptive behaviors with lower levels of disruptive behaviors and stability observed for the DRO intervention when compared to the DRA intervention. Although the DRO intervention resulted in greater decreases in disruptive behaviors when compared to the DRA intervention, the DRA intervention was chosen for manipulation in the independent verification phase due to the minimal difference between the two interventions (i.e., a 5% difference).Additionally, there is habilitative utility in training typically developing children to emit an alternative response because they may have more adaptive behaviors in their repertoire.

During the verification phase, Classroom 2's disruptive behaviors occurred during an average of 10% (range, 7.5%-13.3%) of the observed intervals, remained at a low level and ended with a descending trend.

Figure 4. Brief Functional Analysis for Classroom 2.



Intervention Analysis for Appropriate behaviors for Classroom 2.

Results from intervention analysis for Classroom 2's appropriate behaviors are presented in Fig 6.For Classroom 2, appropriate behaviors occurred during 0% of the observed intervals for the control condition, an average of 0.2% (range, 0%-0.8%) of the observed intervals during the DRO condition, an average of 17.2% (range, 15%-20%) of the observed intervals during the DRA condition. With regard to the control condition and interventions (i.e., DRO and DRA interventions), there was clear separation between control and DRA condition but no separation between the control condition and DRO

intervention. With regard to differences in interventions, the DRA intervention was much superior when compared to the DRO intervention, resulting in moderate level with stability and no overlap in data paths. During the verification phase, appropriate behaviors occurred during an average of 17.2% (range, 6.7%-26.7%) of the observed intervals, starting with a low level and gradually increasing to a high level with an ascending trend.

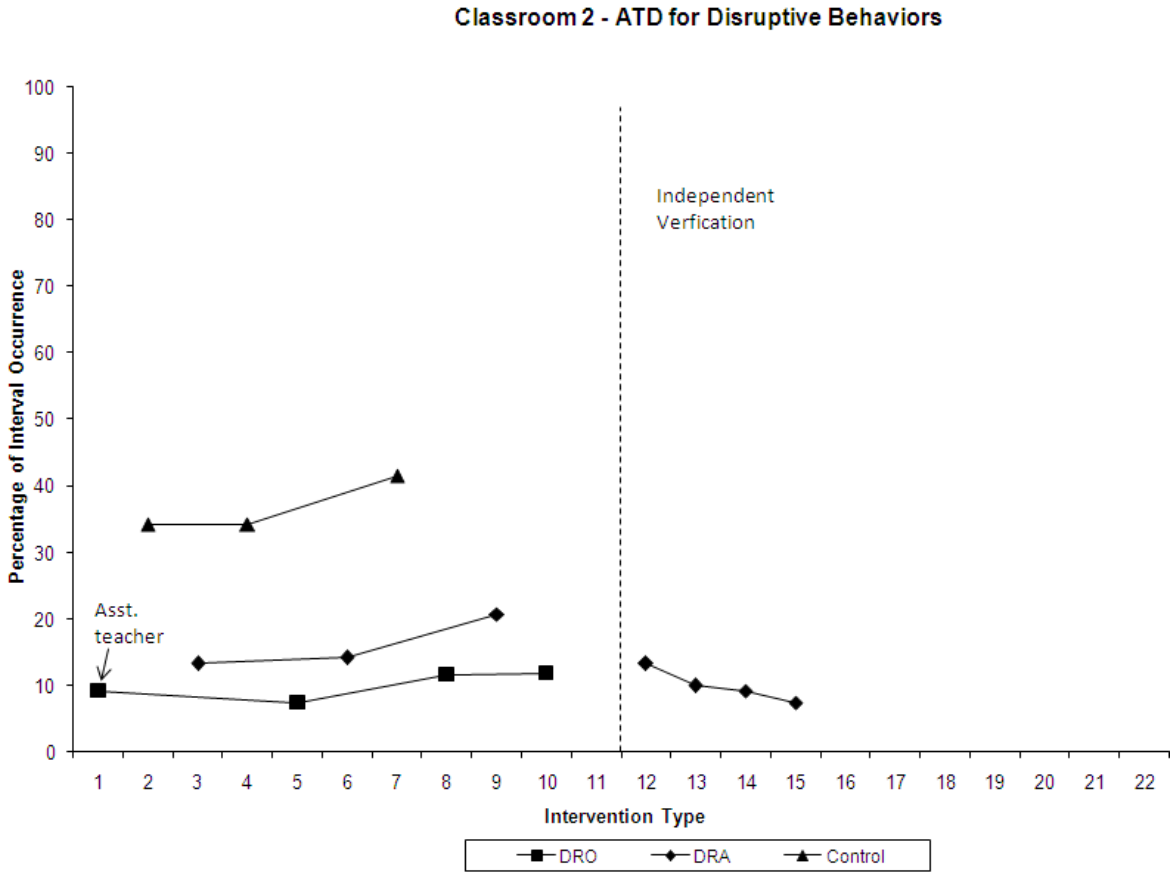
Classroom 3

During a direct-descriptive assessment observation for Classroom 3, disruptive behavior occurred during 41.5% of the observed intervals. The screening observation also indicated that disruptive behavior was followed by teacher attention 2.5% of the observed intervals and by escape and tangible 0% of the observed intervals. The FAIR-T P reflected attention and escape as the function of disruptive behavior. Although the direct-descriptive assessment reflected a limited attention-maintained function (i.e., 2.5% of the intervals), considering the fact that it was based on one observation session, it may not have been a reliable representation of the class's behavior. Nevertheless, it was hypothesized that the function of disruptive behavior was access to attention.

Brief Functional Analysis for Classroom 3.

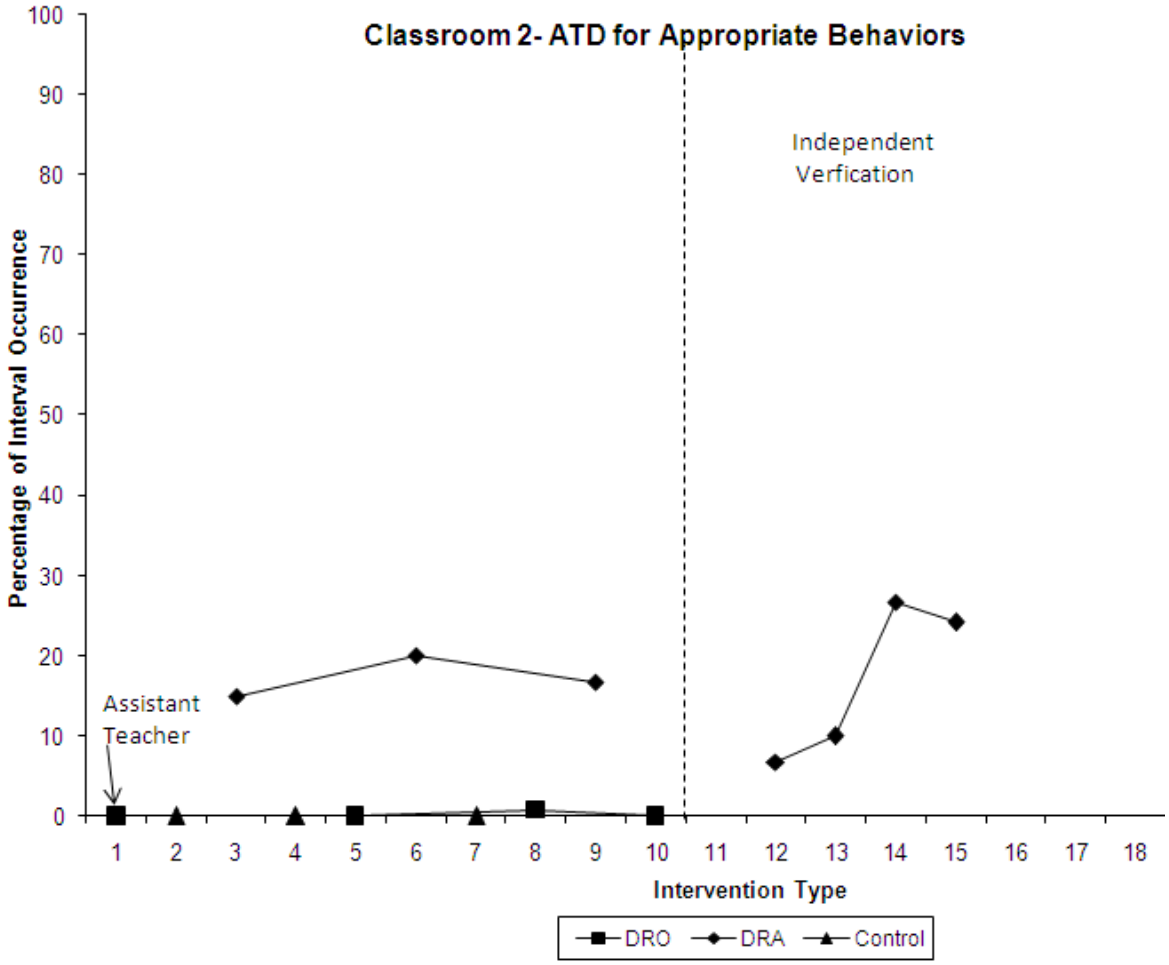
A BFA was implemented during morning drill work in which children engaged in learning the days of the week/months of the year, and mathematical operations/applications.

Figure 5. Intervention Analysis for Classroom 2 for Disruptive Behaviors.



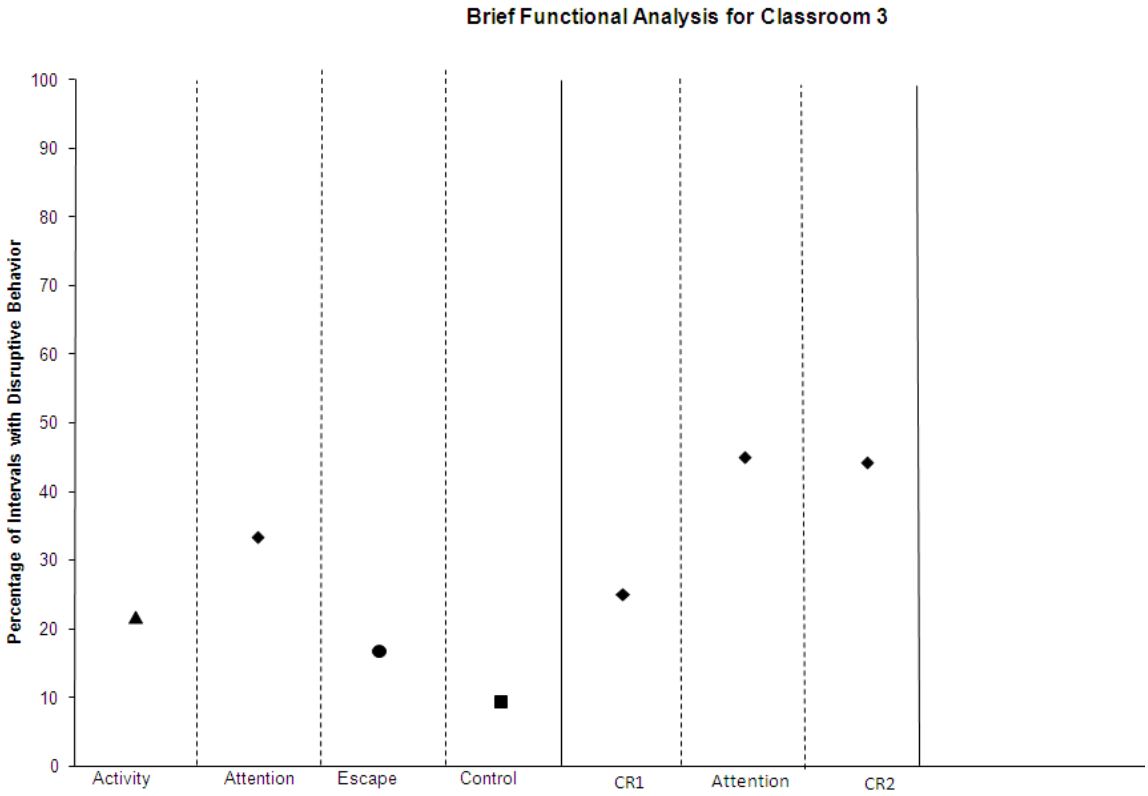
Results for the BFA for classroom 3 are presented in Figure 7. For Classroom 3, disruptive behavior occurred during 21.7% of the observed intervals for the activity condition, 33.3% of the observed intervals during the Attention condition, 16.6% of the observed intervals during the Escape condition and 9.2% of the observed intervals during the Control condition. Based on these results, access to teacher attention was identified as the maintaining variable for the class's disruptive behavior. Therefore, access to attention was verified in the contingency reversal phase. During the first contingency reversal, disruptive behavior occurred during 25% of the observed intervals. When the contingency was restored, disruptive behavior increased to 45% of the observed intervals.

Figure 6. Intervention Analysis for Classroom 2 for Appropriate Behaviors.



Finally, during the second contingency reversal session for Classroom 3, the class's disruptive behavior occurred during 44.2% of the observed intervals. Results from the BFA indicated access to social attention as the maintaining variable for the class's disruptive behavior although the second contingency reversal session did not result in a substantial reduction of level for disruptive behavior. However, as the first contingency reversal resulted in a reduction in disruptive behavior and replication of the attention condition resulted in a return to a high level of disruptive behavior, the primary intervention manipulation was attention.

Figure 7. Brief Functional Analysis for Classroom 3.



Intervention Analysis for Disruptive behaviors for classroom 3.

Results from intervention analysis for disruptive behaviors for Classroom 3 are presented in Figure 8. For Classroom 3, disruptive behaviors occurred during an average of 31.4% (range, 24.2%-37%) of the observed intervals for the control condition, an average of 15.7% (range, 9.2%-20.8%) of the observed intervals during the DRO condition, and an average of 13% (range, 9.2%-16.2%) of the observed intervals during the DRA condition. With regard to separation between the control condition and intervention (i.e., DRO and DRA interventions), there was clear differentiation between control and intervention with no overlap in data paths. With regard to differences between interventions, there was overlap in data paths for the first two data points with

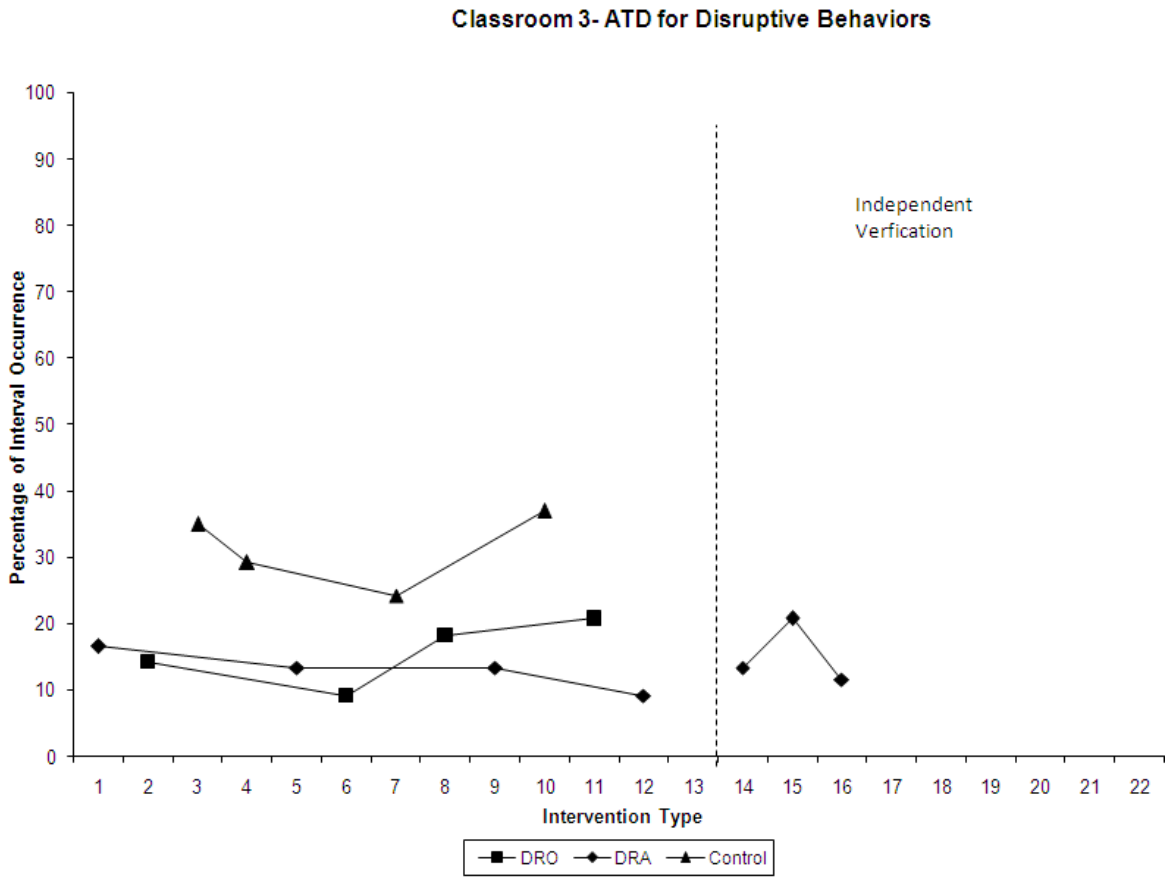
minimal separation between treatments but ending in opposing trends for the last two data points. Overall, the DRA intervention was observed to maintain a low and stable trend while the DRO intervention was observed to end with some variability and an ascending trend; therefore, the DRA intervention was chosen for manipulation in the independent verification phase. During the verification phase, Classroom 3's disruptive behaviors occurred during an average of 15.2% (range,11.6%-20.8%) of the observed intervals and maintained at a low to moderate level, ending in a descending trend.

Intervention Analysis for Appropriate behaviors for Classroom 3.

Results from intervention analysis for appropriate behaviors for Classroom 3 are presented in Figure 9.For Classroom 3, appropriate behaviors occurred during an average of 19.8% (range, 11.7%-27.5%) of the observed intervals for the control condition, an average of 33.2% (range, 24.2%-41.7%) of the observed intervals for the DRO condition, an average of 46.7% (range, 41.7%-57.5%) of the observed intervals for the DRA condition.

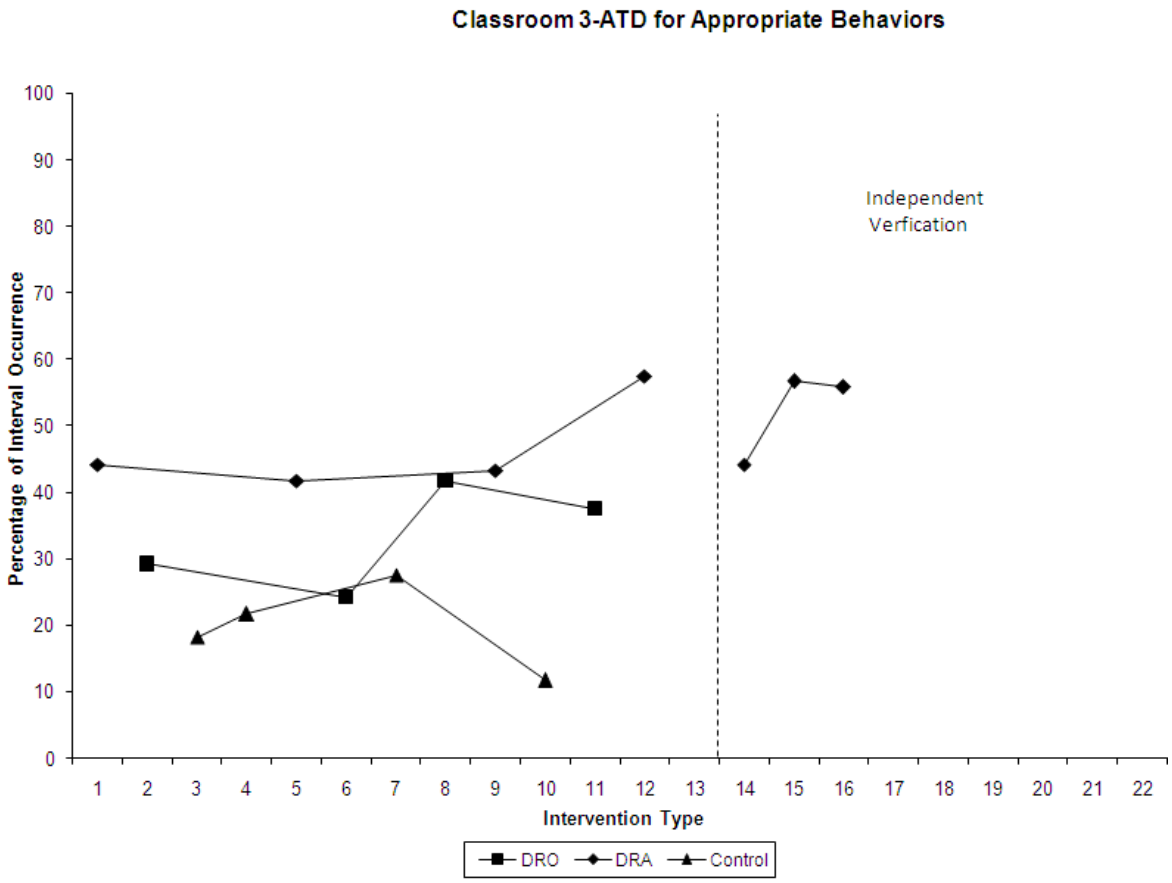
With regard to appropriate behaviors for classroom 3, when looking at the separation between the control condition and intervention (i.e., DRO and DRA interventions), there was clear differentiation and vertical distance between the control condition and DRA intervention with no overlap in data paths and resulting in opposing trends.However, there was slight overlap in one datum between control and DRO intervention; however, resulting in opposing trends.

Figure 8. Intervention Analysis for Disruptive Behaviors for Classroom 3.



With regard to differences between interventions, there was overlap in one datum between DRO and DRA intervention with a higher level and stability observed for the DRA intervention while there was some variability and an ascending trend observed for the DRO intervention; therefore, the DRA intervention was chosen for manipulation in the independent verification phase.During the verification phase, Classroom 3's appropriate behaviors occurred during an average of 52.2% (range, 44.2%-55.8%) of the observed intervals with a high level and ascending trend observed similar to the level observed in the ATD phase.

Figure 9. Intervention Analysis for Appropriate behaviors for Classroom 3.



Effect Size

An additional effect size measure was utilized to evaluate intervention effects (Parker & Hagan-Burke, 2007). This measure included the odds ratio of improvement.

Odds ratios of improvement.

The odds ratio of improvement is one of the methods for evaluating effect size of an intervention when compared to baseline in single case research design (Parker & Hagan-Burke, 2007). Parker and Hagan-Burke consider improvement or meaningful change as magnitude of non overlap of the intervention with the baseline. The odds of improvement in an intervention (e.g., DRO) are the total number of non overlapping data points in the intervention divided by the total number of data points that overlap with the

control condition. Similarly, the odds of improvement for the control condition are the number of control data points that do overlap with intervention divided by the total number of control data points that do not overlap with intervention. Finally, the odds ratio of improvement is calculated by dividing the odds from the intervention by the odds from the control.

Because no data points overlapped from baseline to intervention in some classrooms, odds ratios of improvement are not calculated for individual classrooms given that division by zero would occur. For disruptive behaviors, the odds of improvement for DRO is 36 (6.5/0.18=36), which means that it is 36 times more likely that disruptive behavior will be less when using DRO when compared to control. These odds of improvement are consistent with visual analysis across two classrooms. Specifically, Classrooms 2 and 3 have a clear separation between control and DRO whereas Classroom 1 had 2 data points that had considerable overlap and 1data point that had somewhat of an overlap with the control condition. The odds ratio of improvement when using DRA is 100.

For appropriate behaviors, the odds of improvement for DRO across classrooms are 0.5 (0.8/1.6), which means that there is less than 1 times the likelihood that DRO will increase appropriate behaviors. This figure is consistent with visual analysis across classroom 1 where appropriate behaviors under DRO intervention were substantially less than control, and for classroom 2, DRO overlapped considerably with control as well. However, for classroom 3 appropriate behaviors showed clear separation from control with the exception of two overlapping data points. For DRA intervention, the odds of increasing appropriate behaviors are 5 (2.25/0.44=5). The likelihood of DRA increasing

appropriate behavior is 5 times when compared to control. These odd are consistent with visual analysis for classroom 1 where there were two data points that slightly overlapped with control; for classroom 2 there was no overlap between control and DRA; and for classroom 3, there was clear separation between DRA and control.

Acceptability

At the conclusion of the assessment and intervention procedures, each classroom teacher completed the ARP-R and IRP-15, respectively. The teachers were shown graphs of the assessment and intervention results that included a summarization of the findings of the study. Classroom 1 teacher's total score from the ARP-R was 53, and the total score from the IRP-15 was 75. The lower score on the ARP-R, although "acceptable," may have been due to the fact that the teacher had to do an extended analysis. Classroom 2 teacher's total score from the ARP-R was 62 and the IRP-15 was 82 for the primary teacher and 73 for the assistant teacher. Classroom 3 teacher's total score from the ARP-R was 63 and the IRP-15 was 68.

CHAPTER V

DISCUSSION

Currently, the functional analysis and function based interventions literatures are limited in preschool settings. Additionally, assessment and intervention on a classwide level is limited. VanDerHeyden et al. (2001) conducted direct-descriptive assessments in Head Start classrooms with the class as the unit of analysis. Poole (2009) conducted FA and a function-based intervention using DRO intervention on a classwide level; however, the utility of DRA intervention was not assessed in Poole's study. Therefore the purpose of this study was to conduct assessment and compare two function based interventions.

The current investigation sought to address the following research questions. The first research question was whether a classwide BFA was effective in determining behavioral function for the class's disruptive behavior. For classroom 1, the BFA yielded minimal differentiation between the three conditions, so an extended analysis was conducted to clearly identify the functional reinforcer. The extended analysis resulted in clearly identifying attention as the maintaining function. For classroom 2,results from the BFA indicated access to social attention as the maintaining variable for the class's disruptive behavior although the contingency reversal did not demonstrate decreases in disruptive behaviors. Nevertheless, an intervention using attention as the functional reinforcer resulted in decreases in disruptive behavior for both the DRA and DRO interventions. Similarly, for classroom 3, attention was identified as the maintaining variable with a decrease in disruptive behavior during the initial contingency reversal and replication phase. Although the second contingency reversal did not show decreases in disruptive behavior, treatment effects occurred for both the DRO and DRA interventions.

Results are similar to the findings from the Poole (2009) study wherein a BFA, using class as a unit of analysis, was able to identify the maintaining function for one out of two classrooms.

The second research question sought to evaluate the more effective differential reinforcement intervention (i.e., DRO or DRA) in decreasing the class's disruptive behaviors. For two out of three classrooms (i.e., classrooms 1 and 3), DRA resulted in greatest decreases in disruptive behaviors. For classroom 2, DRO was more effective, although there was only a 5% difference between the two interventions. Current results extend previous findings from Poole (2009) by showing the effectiveness of DRA interventions in decreasing disruptive behaviors. Poole (2009) had only demonstrated the effectiveness of DRO interventions for successfully decreasing disruptive behavior in both classrooms.

The third research question evaluated which function-based intervention would result in greatest increases in appropriate adaptive behaviors. With regard to the DRA intervention, there were substantial increases observed in appropriate behaviors for all three classrooms although for classroom 1 there was some overlap in data (i.e., one to two data points) with the DRO intervention. For the DRO intervention, there were moderate increases in appropriate behaviors for only one out of the three classrooms (i.e., classroom 3). Therefore, it would be safe to conclude that a DRA intervention may be more effective in increasing appropriate behaviors (LeGray et al., 2010). Specifically, DRA interventions actively train the children to access the reinforcer (i.e., social attention) through more socially acceptable means while decreasing the need to exhibit inappropriate (e.g., disruptive behaviors) behaviors. Current results extend previous

findings from the Poole (2009) study by reporting the effectiveness of differential reinforcement interventions (i.e., DRA) in increasing appropriate behaviors. The Poole (2009) study failed to report data about concomitant increases in appropriate behaviors.

Limitations and Future Research.

Some of the limitations of the current study and future research directions are discussed. First, the observation procedure included in this study included sampling the class's behavior by rotating through children in small groups for the Head Start classroom and through the entire class for the two kindergarten classrooms. This procedure may be limited by the small sample of disruptive behavior or missing the disruptive behavior of children not being observed. Although the current study addressed this issue by observing each child for ten seconds instead of observing them for 30 seconds each, as was the case in the Poole (2009) study, it could have still underestimated the class's disruptive behaviors. Future research may include observing multiple students at one time so as to increase the sample of the class's behavior within each interval.

Second, the access to activity condition was modified from traditional activity and tangible conditions due to the class being used as the unit of analysis. A tangible condition was deemed unfeasible due to the fact that the contingency had to be delivered to all children in the group. So, it was decided that an activity condition was more feasible. Unfortunately, there was not a way to provide access to a preferred activity while continuing to present task demands. Future research using the class as the unit of analysis may include a unique tangible or activity condition that tests a single contingency in isolation to avoid this limitation. Moreover, the activity condition in the study might be considered contrived or analogue. However, an activity condition was

included so that a more extensive test of behavioral function was conducted. The author did not want a BFA that was limited with regard to testing possible behavioral functions (i.e., escape and attention only). Given the easy access to a variety of tangible and activities in typical preschool classrooms, it was believed that an activity condition was appropriate for this study.

Third, for Classroom 2, the assistant teacher was trained to implement the first session of the DRO intervention, therefore changing the stimulus conditions under which assessment was conducted. However, this limitation was minimized by the other data that showed a similar trend when the primary teacher resumed implementation of the intervention.

Fourth, integrity data were not collected for the control condition during intervention analysis; therefore, it is difficult to demonstrate if the teacher conducted class in her usual manner prior to being trained on the intervention. This limitation was specifically observed and addressed in Classroom 1 during the fourth and fifth sessions of the control condition when the teacher started using DRA intervention procedures. However, this limitation was offset during the final control condition with a decrease in appropriate behaviors when the teacher implemented the control condition in her usual manner (i.e., prior to being trained in the intervention).

Fifth, time out procedures were used to manage potentially harmful behaviors, such as aggressiveness toward peers, because the teacher was not able to block such behaviors given the large size of the group. Additionally, blocking of aggressive behavior was not feasible without causing an interruption in instruction. Future research should examine the separate and additive effects of time out during intervention.

Sixth, only one direct-descriptive observation lasting for 20 minutes was conducted to assess function. The screening observation may not have adequately captured the function of disruptive behaviors as evident from the low percentage of intervals that were reported for the consequent functions (e.g., attention) across all three classrooms. Considering the fact that instruction occurs at a rapid pace, the teachers may not be able to attend to the problem behavior until it becomes too disruptive or potentially harmful to others.

Seventh, with regard to generalizability and feasibility of the procedures used in this study, the participants in the study were fairly homogenous in terms of age (i.e., three to six years of age); therefore, it is unclear if these procedures would generalize to other settings (e.g., high school students). Finally, all three classrooms had attention as the maintaining function; therefore, it is unclear how this intervention would generalize to other behavioral functions (e.g., escape from task demands).

Despite limitations, the current study builds on the relatively limited research base evaluating the utility of functional analysis procedures in preschool classrooms with non-disabled children exhibiting high incidence disruptive behaviors. Practitioners may now consider BFA of the class's behavior as a method for identifying an effective classwide intervention. However, future research in this area will be important in determining the stability and generality of these findings.

APPENDIX A

TEACHER CONSENT FORM

University of Southern Mississippi
Consent Document for Research Participants

TITLE OF STUDY: Classwide Functional Analysis and Comparison of Function Based Interventions with Preschoolers
Study Site: Preschool/Head Start

Name of Researcher & University affiliation: Veena Y. Poole, M.S.

The University of Southern Mississippi

Dear Teacher,

I am a doctoral student in the School Psychology Program at The University of Southern Mississippi working under the guidance of Dr. Brad A. Dufrene. As part of my dissertation project, I am researching the usefulness of an assessment procedure to construct intervention plans to manage problem behavior in the school setting.

You have been asked to participate in this study because you have made a behavior referral for your class. If you agree to participate, I will ask you to do several things during subsequent meetings that will be scheduled at your convenience. Initially, you will be asked to complete an interview with me to clarify the nature of the behavior referral. Following the interview, observations will be conducted during ongoing classroom activities by myself and/or trained observers from the USM School Psychology Program.

I will then teach you how to implement assessment procedures and interventions for an entire classroom. Training sessions will include modeling, role-playing, and performance feedback. Research studies have found preliminary support for this assessment procedure to be effective in contributing to the intervention development process in the school setting for the treatment of problem behavior.

Session length will last for 30 minutes to one hour three to five days per week over the course of one to two months.

What are the benefits of participation? Benefits for participating in this research project may include: (a) decreases in inappropriate classroom behavior might be observed, (b) increases in appropriate behavior, and (c) you may acquire new strategies to implement with student's exhibiting problem behavior in your classroom.

Are there any risks associated with participation? Minimal risks are anticipated for involvement in this research project. Specifically, implementing a novel assessment procedure might make you feel unsure about the assessment conditions and your expertise. Consistent feedback coupled with your opportunity to ask questions or clarify procedures will occur prior and following a session. In the event that a child becomes aggressive and poses a threat to the safety of self or others, all attempts will be made to block the aggression to ensure the safety and welfare of the children. However, this risk is thought to be offset by the treatment sessions that follow the assessment phase, which will possibly reduce disruptive behaviors of the child.

Will this information be kept confidential?

All information obtained during the course of this research study will be kept strictly confidential. This means that your name and any other identifying information will be withheld from all persons not involved in this study. Results from this research project may be shared at professional conferences or published in scholarly journals; however, all identifying will be removed from publications and/or presentations. Your participation in this study is entirely voluntarily. In addition, you may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Specifically, if you choose not to participate, you will still receive behavioral and assessment services for the referred students in your classroom.

Whereas no assurance can be made concerning results that may be obtained (as results from investigational studies cannot be predicted) the primary experimenter will take every precaution consistent with the best scientific practice.

Who do I contact with research questions? If you agree to participate, please read, sign, and return the following page. Please keep this letter for your records. If you have any questions about this study, please contact Veena Poole at (601-270-4996; veena.poole@usm.edu) or Dr. Brad A. Dufrene (601-266-5256; brad.dufrene@usm.edu).

This project and this consent form have been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the Institutional Review Board Office, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406-5147, (601) 266-6820.

Sincerely,

_____

Veena Poole, M.S.,
School Psychologist-In Training.

THIS SECTION TO BE COMPLETED BY TEACHER

Please Read and Sign the Following:

I have read the above documentation and consent to participate in this project. I have had the purpose and procedures of this study explained to me and have had the opportunity to ask questions. I am voluntarily signing this form to participate under the conditions stated. I have also received a copy of this consent. I further understand that all data collected in this study will be confidential and that my student's name and the teacher's name will not be associated with any data collected. I understand that I may withdraw my consent for participation at any time without penalty, prejudice, or loss of privilege.

_____ _____

Signature of Teacher *Date*

_____

Signature of Witness

APPENDIX B

TEACHER DEMOGRAPHIC SHEET

Teacher number: _____

Teacher gender:_____

Number of years experience with Head Start/Pre-School: _____

Number of years experience in child care, teaching, etc.: _____

Highest educational attainment:

_____

_____

Job specific training:

_____

_____

_____

APPENDIX C

FUNCTIONAL ASSESSMENT INFORMATION RECORD FOR TEACHERS – PRESCHOOL VERSION

The University of Southern Mississippi

School Psychology Service Center

If information is being provided by both the Teacher and the Classroom Aide, indicate both respondents' names. In addition, in instances where divergent information is provided, note the sources of specific information.

Student: _____ Respondent(s):_____

School: _____ Age: _____ Sex: M F Date: _____

If information is being provided by both the Teacher and the Classroom Aide, indicate both respondents' names. In addition, in instances where divergent information is provided, note the sources of specific information.

Student:_____ Respondent(s):_____

School:_____ Age:_____ Sex: M F Date:_____

1. Describe the referred student. What is he/she like in the classroom? (Write down what you believe is the most important information about the referred student.)

_____
_____
_____
_____

2. Pick a second student of the same sex who is also difficult to manage. What makes the referred student more difficult than the second student?

_____
_____
_____
_____

3. a. Is the student's developmental age equivalent to their chronological age ?

_____

b. What is your estimate of the student's developmental age?

_____

4. a. Are the student's social skills developmentally appropriate?

_____

b. Does the student's social skills represent a behavioral excess or deficit?

_____

5. a. What percentage of requests does the student comply with the first time presented? (0 - 100%)?

_____

b. What percentage will they eventually comply with?

_____

c. What is the student's accuracy for compliance (0 - 100%)?

_____

6. a. What is the student's percentage of work completion (0-100%)

_____

b. What is the student's accuracy of completed work (0-100%)

_____

7. Does the student receive any regular medications?
_____ Yes _____ No If yes, briefly explain:

_____
_____
_____
___

8. Does the student have any diagnosed medical conditions?
_____ Yes _____ No If yes, briefly explain:

_____
_____
_____

9. Please describe this student's strengths.

_____
_____

10. What procedures have you tried in the past to deal with this student's problem behavior?

_____
_____
_____

Have previous procedures been successful? Why? Why not?

_____
_____
_____

11. Describe your current class-wide behavior management plan.

_____
_____
_____
_____

12. Does the student and/or their family receive services in the home? If so, what types of services?

_____
_____
_____
_____

13. Briefly list below the student's typical daily schedule of activities.

Time	Activity	Time	Activity
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

14. When during the day (two classroom activities and times) does the student's problem behavior(s) typically occur?

Classroom Activity #1_____
Time_____

Classroom Activity #2_____
Time_____

15. Please indicate good days and times to observe. (At least two observations are needed.)

Observation #1 (Back-up)	Observation #2	Observation #3
Date_____	Date_____	Date_____
Time_____	Time_____	Time_____

Problem Behaviors

Please list one to three problem behaviors in order of severity. Do not use a general description such as "disruptive" but give the actual behavior such as "doesn't stay in his/her seat", or "talks out without permission".

1. _____
_____

2. _____
_____

3. _____
_____

1. Rate how *manageable* the behavior is:
   a. Problem Behavior 1 — 1 2 3 4 5 (Unmanageable — Manageable)
   b. Problem Behavior 2 — 1 2 3 4 5 (Unmanageable — Manageable)
   c. Problem Behavior 3 — 1 2 3 4 5 (Unmanageable — Manageable)

2. Rate how *disruptive* the behavior is:
   a. Problem Behavior 1 — 1 2 3 4 5 (Mildly — Very)
   b. Problem Behavior 2 — 1 2 3 4 5 (Mildly — Very)
   c. Problem Behavior 3 — 1 2 3 4 5 (Mildly — Very)

3. How often does the behavior occur *per day* (please circle)?
   a. Problem Behavior 1 — <1-3 4-6 7-9 10-12 >13

b. Problem Behavior 2 <1-3 4-6 7-9 10-12 >13

c. Problem Behavior 3 <1-3 4-6 7-9 10-12 >13

4. How *long* does the behavior last?

a. Problem Behavior 1 < 1 min 1-5 min 6-10 min >10 min

b. Problem Behavior 2 < 1 min 1-5 min 6-10 min >10 min

c. . Problem Behavior 3 < 1 min 1-5 min 6-10 min >10 min

5. How many *months* has the behavior been present?

a. Problem Behavior 1 <1 2 3 4 entire school year

b. Problem Behavior 2 <1 2 3 4 entire school year

c. Problem Behavior 3 <1 2 3 4 entire school year

Antecedents: Problem Behavior #_____ Yes No

1. Does the behavior occur more often during a certain *type* of task? _____ _____

2. Does the behavior occur more often during *easy* tasks? _____ _____

3. Does the behavior occur more often during *difficult* tasks? _____ ____

4. Does the behavior occur more often during *new* tasks? _____ _____

5. Does the behavior occur more often when a request is made to *stop* an activity? _____ _____

6. Does the behavior occur more often when a request is made to *begin a new activity*? _____ _____

7. Does the behavior occur more often during *transition* periods? _____ _____

8. Does the behavior occur more often when a *disruption* occurs in the student's normal routine? _____ _____

9. Does the behavior occur more often when the student's *request has been denied*? _____ _____

11. Does the behavior occur more often with a *specific person?* _____ _____

12. Does the behavior occur more often when a *specific person is not there*? _____ _____

13.	Are there any other behaviors that usually *precede* the problem behavior?	_____	_____
14.	Is there anything you could do that would *ensure* the occurrence of the behavior?	_____	_____
15.	Are there any events occurring in the child's *home* that seem to precede occurrence of the behavior at school?	_____	_____
16.	Does the behavior occur more often in *certain settings*? (circle all that apply) large group small group independent work one-to-one interaction bathroom playground cafeteria bus other:_____	_____	_____

Antecedents: Problem Behavior #_____		Yes	No
1.	Does the behavior occur more often during a certain *type* of task?	_____	_____
2.	Does the behavior occur more often during *easy* tasks?	_____	_____
3.	Does the behavior occur more often during *difficult* tasks?	_____	____
4.	Does the behavior occur more often during *new* tasks?	_____	_____
5.	Does the behavior occur more often when a request is made to *stop* an activity?	_____	_____
6.	Does the behavior occur more often when a request is made to *begin a new activity*?	_____	_____
7.	Does the behavior occur more often during *transition* periods?	_____	_____
8.	Does the behavior occur more often when a *disruption* occurs in the student's normal routine?	_____	_____
9.	Does the behavior occur more often when the student's *request has been denied*?	_____	_____
11.	Does the behavior occur more often with a *specific person?*	_____	_____
12.	Does the behavior occur more often when a *specific person is not there*?	_____	_____

13. Are there any other behaviors that usually *precede* the problem behavior? _____ _____

14. Is there anything you could do that would *ensure* the occurrence of the behavior? _____ _____

15. Are there any events occurring in the child's *home* that seem to precede occurrence of the behavior at school? _____ _____

16. Does the behavior occur more often in *certain settings*? _____ _____
(circle all that apply)
large group small group independent work one-to-one interaction

bathroom playground cafeteria bus
other:_____

Antecedents: Problem Behavior #_____:_____ Yes No

1. Does the behavior occur more often during a certain *type* of task? _____ _____

2. Does the behavior occur more often during *easy* tasks? _____ _____

3. Does the behavior occur more often during *difficult* tasks? _____ ____

4. Does the behavior occur more often during *new* tasks? _____ _____

5. Does the behavior occur more often when a request is made to *stop* an activity? _____ _____

6. Does the behavior occur more often when a request is made to *begin a new activity*? _____ _____

7. Does the behavior occur more often during *transition* periods? _____ _____

8. Does the behavior occur more often when a *disruption* occurs in the student's normal routine? _____ _____

9. Does the behavior occur more often when the student's *request has been denied*? _____ _____

11. Does the behavior occur more often with a *specific person?* _____ _____

12. Does the behavior occur more often when a *specific person is not there*? _____ _____

13. Are there any other behaviors that usually *precede* the problem behavior? _____ _____

14. Is there anything you could do that would *ensure* the occurrence of the behavior? _____ _____

15. Are there any events occurring in the child's *home* that seem to precede occurrence of the behavior at school? _____ _____

16. Does the behavior occur more often in *certain settings*? _____ _____
(circle all that apply)
large group small group independent work one-to-one interaction

bathroom playground cafeteria bus
other:_____

Consequences: Problem Behavior #_____:_____

1. Please indicate whether the following consequences occur after the behavior is exhibited.

Consequence	Yes	No
Access to Preferred Activity	_____	_____
Termination of Task	_____	_____
Rewards	_____	_____
Peer Attention	_____	_____
Teacher Attention	_____	_____
Praise	_____	_____
Ignore	_____	_____
Re-direction	_____	_____
Interrupt	_____	_____
Reprimand	_____	_____
Corporal Punishment	_____	_____

2. Is there any task you have stopped presenting to the student as a result of the problem behavior?
_____ Yes _____ No

If yes, describe:_____

3. Are there other problem behaviors that often occur after the behavior is exhibited?
_____ Yes _____ No

If yes, describe:_____

4. Does the student typically receive praise or any positive consequence when behavior
occurs that you would like to see instead of the problem behavior?
_____ Yes _____ No

Comments:_____

Consequences: Problem Behavior #_____

1. Please indicate whether the following consequences occur after the behavior is exhibited.

Consequence	Yes	No
Access to Preferred Activity	_____	_____
Termination of Task	_____	_____
Rewards	_____	_____
Peer Attention	_____	_____
Teacher Attention	_____	_____
Praise	_____	_____
Ignore	_____	_____
Re-direction	_____	_____
Interrupt	_____	_____
Reprimand	_____	_____
Corporal Punishment	_____	_____

2. Is there any task you have stopped presenting to the student as a result of the problem behavior?
_____ Yes _____ No
If yes, describe:_____

3. Are there other problem behaviors that often occur after the behavior is exhibited?
_____ Yes _____ No

If yes, describe:_____

4. Does the student typically receive praise or any positive consequence when behavior occurs that you would like to see instead of the problem behavior?
_____ Yes _____ No

Comments:_____

Consequences: Problem Behavior #_____:_____

1. Please indicate whether the following consequences occur after the behavior is exhibited.

Consequence	Yes	No
Access to Preferred Activity	_____	_____
Termination of Task	_____	_____
Rewards	_____	_____
Peer Attention	_____	_____
Teacher Attention	_____	_____
Praise	_____	_____
Ignore	_____	_____
Re-direction	_____	_____
Interrupt	_____	_____
Reprimand	_____	_____
Time-out	_____	_____

Restraint _____ _____

Corporal Punishment _____ _____

2. Is there any task you have stopped presenting to the student as a result of the problem behavior?
_____ Yes _____ No

If yes, describe:_____

3. Are there other problem behaviors that often occur after the behavior is exhibited?
_____ Yes _____ No

If yes, describe:_____

4. Does the student typically receive praise or any positive consequence when appropriate behavior occurs?
_____ Yes _____ No

Please Describe
:_____

APPENDIX D

ASSESSMENT RATING PROFILE-REVISED (ARP-R)

Please circle the number that best describes your agreement or disagreement with each statement.

Statement	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1. This was an acceptable assessment strategy for the child's problems	1	2	3	4	5	6
2. Most teachers would find this approach to assessment appropriate for problems in addition to this child's current problems	1	2	3	4	5	6
3. This assessment proved effective in identifying the child's problems	1	2	3	4	5	6
4. I would suggest the use of this assessment to other teachers	1	2	3	4	5	6
5. I would be willing to receive assessment results such as those described with a student transferring into my school	1	2	3	4	5	6
6. The assessment would be appropriate for a variety of children	1	2	3	4	5	6
7. The assessment was a fair way to identify the child's problems	1	2	3	4	5	6
8. This assessment was reasonable for the problems described	1	2	3	4	5	6
9. I liked the assessment procedures used in this assessment	1	2	3	4	5	6
10. This assessment was a good way to handle the child's problems	1	2	3	4	5	6
11. Overall, this assessment was beneficial for the child	1	2	3	4	5	6
12. This assessment was helpful in the development of intervention strategies	1	2	3	4	5	6

Adapted from Eckert, Hintze, and Shapiro, 1999

APPENDIX E

INTERVENTION RATING PROFILE-15(IRP-15)

Please respond to each of the following statements thinking about the intervention you read/were recommended. Please then circle the number associated with your response. Be sure to answer all statements.

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
This would be an acceptable intervention for the child's problem behavior.	**1**	**2**	**3**	**4**	**5**	**6**
Most teachers would find this intervention appropriate for behavior problem in addition to the one described.	**1**	**2**	**3**	**4**	**5**	**6**
This intervention should prove effective in helping to change the child's problem behavior.	**1**	**2**	**3**	**4**	**5**	**6**
I would suggest the use of this intervention to other teachers	**1**	**2**	**3**	**4**	**5**	**6**
The child's behavior problem is severe enough to warrant the use of this intervention.	**1**	**2**	**3**	**4**	**5**	**6**
Most teachers would find this procedure suitable for the problem behavior described.	**1**	**2**	**3**	**4**	**5**	**6**
I would be willing to use this intervention in the classroom setting.	**1**	**2**	**3**	**4**	**5**	**6**
This intervention would *not* result in negative side effects for the child.	**1**	**2**	**3**	**4**	**5**	**6**
This intervention would be appropriate for a variety of children.	**1**	**2**	**3**	**4**	**5**	**6**
This intervention is consistent with those I have used in the classroom setting.	**1**	**2**	**3**	**4**	**5**	**6**
The intervention is a fair way to handle the child's problem behavior.	**1**	**2**	**3**	**4**	**5**	**6**
This intervention is reasonable for the problem behavior described.	**1**	**2**	**3**	**4**	**5**	**6**
I liked the procedures used in this intervention.	**1**	**2**	**3**	**4**	**5**	**6**
This intervention was a good way to handle this child's behavior problem.	**1**	**2**	**3**	**4**	**5**	**6**
Overall, this intervention would be beneficial to this child.	**1**	**2**	**3**	**4**	**5**	**6**

APPENDIX F

OBSERVATION FORM

Data Collection Sheet

Classroom

Observer

Data Collection Sheet

Child:

Observer:

	Disruptive Behavior	Appropriate Behaviors	Attention	Escape	Tangible		Disruptive Behavior	Appropriate Behaviors	Attention	Escape	Tangible
1.1						6.1					
1.2						6.2					
1.3						6.3					
1.4						6.4					
1.5						6.5					
1.6						6.6					
2.1						7.1					
2.2						7.2					
2.3						7.3					
2.4						7.4					
2.5						7.5					
2.6						7.6					
3.1						8.1					
3.2						8.2					
3.3						8.3					
3.4						8.4					
3.5						8.5					
3.6						8.6					
4.1						9.1					
4.2						9.2					
4.3						9.3					
4.4						9.4					
4.5						9.5					
4.6						9.6					
5.1						10.1					
5.2						10.2					
5.3						10.3					
5.4						10.4					
5.5						10.5					
5.6						10.6					

APPENDIX G

PRE-TEACHING SCRIPT FOR PRE+DRA CONDITION FOR CLASSROOM 1

1. Teacher begins the pre-teaching section in the following manner:

    a. What do you do when I start teaching?
    b. You have to look at me and the board.
    c. Raise your hand if you want to answer/ask a question (demonstrates same)
    d. Raise one finger to request to go to the bathroom (demonstrates same)
    e. Raise two fingers to request a tissue (demonstrates same)
    f. Wait for me to call on you or give you permission.

2. Teacher calls on two children by name and asks them what they do when they need something (i.e., a tissue or want to ask a question)
3. Teacher praises them for an appropriate response
4. If the student gives an incorrect response, the teacher provides the correct response and asks them again after 5s. (Repeat steps 2, 3, and 4 until correct response given)
5. After correct responses from two students, teacher begins instruction.

APPENDIX H

PRE-TEACHING SCRIPT FOR PRE+DRA CONDITION FOR CLASSROOM 2

1. Teacher begins the pre-teaching section in the following manner:

    a. What do you do when I start teaching?
    b. You have to look at me and the book.
    c. Raise your hand if you someone is bothering you or you don't understand what I am saying, or have a question (demonstrates same)
    d. Wait for me to call on you.

2. Teacher calls on two children by name and asks them what they do when they need something.
3. Teacher praises them for an appropriate response
4. If the student gives an incorrect response, the teacher provides the correct response and asks them again after 5s. (Repeat steps 2, 3, and 4 until correct response given)
5. After correct responses from two students, teacher begins instruction.

APPENDIX I

PRE-TEACHING SCRIPT FOR PRE+DRA CONDITION FOR CLASSROOM 3

1. Teacher begins the pre-teaching section in the following manner:

    a. What do you do when I start teaching?
    b. You have to look at me and the book.
    c. Raise your hand if you want to answer/ask a question (demonstrates same)
    d. Wait for me to call on you or give you permission.

2. Teacher calls on two children by name and asks them what they do when they need something (e.g., a tissue or want to ask a question)
3. Teacher praises them for an appropriate response
4. If the student gives an incorrect response, the teacher provides the correct response and asks them again after 5s. (Repeat steps 2, 3, and 4 until correct response given)
5. After correct responses from two students, teacher begins instruction.

APPENDIX J

FUNCTIONAL ASSESSEMENT INFORMANT RECORD FOR TEACHERS

(FAIR-T P) CHECKLIST

Instructions: Indicate if the respondent endorsed these specific antecedent or consequent events. The checklist will assist in identifying behavioral function. Mark if the items of the FAIR-T P were (yes) or were not (no) endorsed by the respondent.

Variables leading to a hypothesis of behavioral function of problem behavior

Antecedent Events Endorsed:

Does the behavior occur more often during a certain *type* of task?
Yes_____ No_____

Does the behavior occur more often during *easy* tasks?
Yes_____ No_____

Does the behavior occur more often during *difficult* tasks?
Yes_____ No_____

Does the behavior occur more often during *new subject material*?
Yes_____ No_____

Does the behavior occur more often during *certain subject areas*?
Yes_____ No_____

Does the behavior occur more often when a request is made to begin a new a activity?
Yes_____ No_____

Does the behavior occur more often in certain settings?
(circle those that were endorsed)
Large group small group independent work

One-to-one interactions

Consequent Events Endorsed:	**YES**	**NO**
Access to preferred activity	_____	_____
Termination of Task	_____	_____

Is there any task you have stopped presenting to the student as a result of the problem behavior? Yes_____ No_____

Variables leading to a hypothesis of attention-maintained problem behavior

Antecedent Events Endorsed:

Does the behavior occur more often when a *specific person is absent* from the room? Yes_____ No_____

Does the behavior occur more often when a *specific person is present* in the room? Yes_____ No_____

Consequent Events Endorsed:	**YES**	**NO**
Peer Attention	_____	_____
Teacher Attention	_____	_____
Praise	_____	_____
Ignoring	_____	_____
Re-direction	_____	_____
Interruption	_____	_____
Reprimand	_____	_____

Hypothesis of Behavioral Function:

_____
_____
_____

APPENDIX K

FUNCTIONAL ANALYSIS PROTOCOL (CONTROL)

Classroom: _____ Teacher: _____

Session: _____ Date: _____

Condition: **CONTROL**

Operational Definition and Measurement of Target Behaviors

Target Behavior 1:	**To be determined based on referral**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral
Target Behavior 2:	**To be determined based on referral**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral

Data Collection Procedures and Other Behavioral Definitions

1. **Target Behavior**- - Interval recording
2. **Engagement**- - Interval recording

Session Duration:	10 minutes
Setting:	Classroom
Type of activity:	Putting puzzles together
Materials:	N/A

Procedures for Control condition:

1. Class is seated in the appropriate area for activity.
2. Teacher says, "[Class], let's work on some project," that involves some demand other than academic demands.
3. Interact with the class by providing a neutral comment every 30s.
4. **Do not respond to any problem behavior.**

APPENDIX L

FUNCTIONAL ANALYSIS PROTOCOL (ESCAPE)

Classroom: _____ Researcher: _____

Session: _____ Date: _____

Condition: **ESCAPE**

Operational Definition and Measurement of Target Behaviors

Target Behavior 1:	**To be determined based on referral**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral
Target Behavior 2:	**To be determined based on referral**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral
Target Behavior 3:	**Compliance**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral

Data Collection Procedures and Other Behavioral Definitions

1. **Compliance with Teacher's request** - - Interval recording
2. **Removal of activity** - - Interval recording
3. **Problem Behavior**- - Interval recording
4. **Task Engagement**- - Interval recording

Session Duration:	20 minutes
Setting:	Classroom
Type of activity:	Direct Instruction
Materials:	Teachers' Work Book

Procedures for Escape condition:

1. Class seated in the appropriate area for direct instruction.

2. Say “Class, it is time for direct instruction.”

3. Say, “[*e.g., I need you all to look at the book]*.” (or some other appropriate first command for the activity).

4. Present command every 5 s.
   - If the class complies, provide praise and deliver next command as needed.
   - If even one student is disruptive, provide a break *[teacher stops instruction for 30 s by saying, “Class, you are being disruptive" and turns her head for 30 s]*.

3. **Contingent on each occurrence of target behavior:**
   - **Discontinue direct instruction, saying "You'll are being disruptive." and provide a 30s break by turning head away from the class.**
   - **Repeat the instruction after the 30s break**
   - **DO NOT PROVIDE CLASS WITH ANY ATTENTION**

4. **Contingent on *compliance with a request*:**
   a. **Point to the next picture and repeat instruction**

5. **Do not respond to any other problem behavior**.

APPENDIX M

FUNCTIONAL ANALYSIS PROTOCOL (ATTENTION)

Classroom: _____ Researcher: _____

Session: _____ Date: _____

Condition: **ATTENTION**

Operational Definition and Measurement of Target Behaviors

Target Behavior 1:	**To be determined based on referral**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral
Target Behavior 2:	**To be determined based on referral**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral

Data Collection Procedures and Other Behavioral Definitions

1. **Teacher Attention** - - Interval recording
2. **Target Behavior- -** Interval recording

Session Duration:	20 minutes
Setting:	Classroom
Type of activity:	Direct Instruction
Materials:	Teachers' Work Book

Procedures for Attention condition:

1. Say, “Class, it’s time for direct instruction.”

2. Say, “Class, “What is this?” by pointing to a picture.”

3. **Contingent on each occurrence of target behavior:**
    - **Provide three brief verbal reprimands (e.g., “stop hitting”, “you are being disruptive”, “You need to stop playing”)**
    - **Then divert your attention back to the task.**

4. **Do not respond to any other appropriate or replacement behavior.**

APPENDIX N

FUNCTIONAL ANALYSIS PROTOCOL (ACTIVITY)

Classroom: _____ Researcher: _____

Session: _____ Date: _____

Condition: **ACTIVITY**

Operational Definition and Measurement of Target Behaviors

Target Behavior 1:	**To be determined based on referral**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral
Target Behavior 2:	**To be determined based on referral**
Definition:	To be determined based on referral
Dependent Measure:	To be determined based on referral

Data Collection Procedures and Other Behavioral Definitions

1. **Researcher Attention** - - Interval recording
2. **Target Behavior- -** Interval recording

Session Duration:	20 minutes
Setting:	Classroom
Type of activity:	Preferred activity [e.g., singing a song]
Materials:	N/A

Procedures for Activity condition:

1. Say, [e.g., C*lass*, let's sing a song].

2. Interact with the class for approximately 30 s until the class is engaged in the activity.

3. After 30 s, say, "it is time for direct instruction" [or some other less preferred activity]

4. **Contingent on each occurrence of target behavior:**
   - **Resume the preferred activity for 30 s.**
   - **After 30 s has elapsed, resume less preferred activity until the occurrence of target behavior.**

5. **Do not respond to any other problem behavior.**

APPENDIX O

INTERVENTION PROTOCOL (DRO CONDITION)

Attention

Teacher: _____ Date: _____

Directions: Please be sure to implement the following steps ***exactly*** as they are written

1. Class is seated in the appropriate area for direct instruction.
2. Teacher begins direct instruction.
3. Contingent on class not exhibiting problem behavior for 30 s.
    a. Teacher provides 3 general praise statements
    b. Following verbal praise, teacher continues with direct instruction.
4. Teacher does not respond to any other problem behavior
5. Repeat step 3 for each non occurrence of target behavior

APPENDIX P

INTERVENTION PROTOCOL (PRE+DRA CONDITION)

Attention

Teacher: _____ Date: _____

Directions: Please be sure to implement the following steps ***exactly*** as they are written.

1. Class is seated in the appropriate area for direct instruction.
2. Teacher does pre-teaching in the following manner:
    a. Tells the class what to do.
    b. Shows the class what to do.
    c. Has two children practice what she told them to do.
    d. Teacher gives the class feedback on appropriate behaviors.
3. Teacher begins direct instruction.
4. Contingent on the class exhibiting a replacement behavior after a 30s absence of disruptive behavior.
    a. Teacher provides 3 verbal praise statements specific to use of replacement behaviors.
    b. Following verbal praise, teacher continues with direct instruction.
5. Teacher does not respond to any other problem behavior.
6. Repeat step 4 for each non occurrence of target behavior.

APPENDIX Q

PROCEDURAL INTEGRITY CHECKLIST FOR FUNCTIONAL ANALYSIS

CONDITIONS (CONTROL)

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Condition: **CONTROL**

This form is used to assess the level of procedural integrity for each teacher implemented functional analysis **control** condition. Record if the teacher behaviors were implemented as planned (*Yes*) or not implemented as planned (*No*) during each FA control condition.

	YES	**NO**	**N/A**
1. Class is seated in the activity area.	____	____	____
2. Teacher starts the preferred activity with class.	____	____	____
3. Teacher provides a neutral comment every 30 s	____	____	____
4. Teacher does not respond to problem behavior	____	____	____
5. Teacher does not present academic demands to the student	____	____	____

*** Repeat steps 3-5 for each 30 s interval**

APPENDIX R

PROCEDURAL INTEGRITY CHECKLIST FOR FUNCTIONAL ANALYSIS

CONDITIONS (ESCAPE)

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Condition: **ESCAPE**

This form is used to assess the level of procedural integrity for each teacher implemented functional analysis **escape** condition. Record if the teacher behaviors were implemented as planned (*Yes*) or not implemented as planned (*No*) during each FA demand condition.

	YES	**NO**	**N/A**
1. Seats class in the appropriate area for direct instruction.	____	____	____
2. Teacher begins direct instruction by pointing at the book.	____	____	____
3. Contingent on disruption behavior, the teacher say's "You'll are being disruptive." and turns her head for 30 s, providing the class with a break.	____	____	____
4. After the 30 s break, the teacher continues with instruction.	____	____	____
5. Teacher does not respond to any other problem behavior	____	____	____

*** Repeat steps 3-5 for each escape sequence**

APPENDIX S

PROCEDURAL INTEGRITY CHECKLIST FOR FUNCTIONAL ANALYSIS CONDITIONS (ATTENTION)

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Condition: **ATTENTION**

This form is used to assess the level of procedural integrity for teacher implemented functional analysis **attention** condition. Record if the teacher behaviors were implemented as planned (*Yes*) or not implemented as planned (*No*) during each FA attention condition.

	YES	**NO**	**N/A**
1. Class is seated in the appropriate area for direct instruction.	____	____	____
2. Teacher begins direct instruction.	____	____	____
3. Contingent on any student exhibiting target behavior			
a. Teacher provides three brief verbal reprimands.	____	____	____
b. Following the verbal reprimands, teacher continues with direct instruction.	____	____	____
4. Teacher does not respond to any other problem behavior	____	____	____
5. Teacher does not provide attention for appropriate behavior	____	____	____

*** Repeat step 3-5 for each occurrence of target behavior**

APPENDIX T

PROCEDURAL INTEGRITY CHECKLIST FOR FUNCTIONAL ANALYSIS

CONDITIONS (ACTIVITY)

Student: _____ Session: _____

Teacher: _____ Date: _____

Observer: _____ Condition: **ACTIVITY**

This form is used to assess the level of procedural integrity for each teacher implemented functional analysis **activity** condition. Record if the teacher behaviors were implemented as planned (*Yes*) or not implemented as planned (*No*) during each FA control condition.

	YES	**NO**	**N/A**
1. Participant is seated in the appropriate area for direct instruction.	____	____	____
2. Teacher begins preferred activity for 30 s.	____	____	____
3. Teacher stops preferred activity after 30 s and begins direct instruction.	____	____	____
4. Teacher provides preferred activity contingent on occurrence of target behavior.	____	____	____
5. Teacher does not respond to problem behavior	____	____	____
6. Teacher does not present academic demands to the student during the activity.	____	____	____

*** Repeat steps 3-5 for each 30 s interval**

APPENDIX U

INTEGRITY CHECKLIST (DRO CONDITION)

Attention

Directions: Place a check in the "Yes" or "No" column after each step to indicate whether the implementer completed that step.

	YES	**NO**	**N/A**
1. Class is seated in the appropriate area for direct instruction.	____	____	____
2. Teacher begins direct instruction.	____	____	____
3. Contingent on student not exhibiting target behavior for 30 s.			
a. Teacher provides 3 general praise statements.	____	____	____
b. Following the verbal praise, teacher continues with direct instruction.	____	____	____
4. Teacher does not respond to any other problem behavior	____	____	____
5. Teacher does not praise use of specific replacement behaviors	____	____	____
6. Repeats steps 3-5 for each non occurrence of target behavior	____	____	____

Use the following formula to calculate treatment integrity:

(Total number of checks in the "Yes" column) / (7) x (100) = _____

APPENDIX V

INTEGRITY CHECKLIST (PRE+DRA CONDITION)

Attention

Directions: Place a check in the "Yes" or "No" column after each step to indicate whether the implementer completed that step.

	YES	**NO**	**N/A**
1. Class is seated in the appropriate area for direct instruction.	____	____	_____
2. Teacher does pre-teaching in the following manner:			
a. Tells the class what to do.	____	____	_____
b. Shows the class what to do.	____	____	_____
c. Has two children practice what she told them to do.	____	____	_____
d. Teacher gives the class feedback on appropriate replacement behaviors.	____	____	_____
3. Teacher begins direct instruction	____	____	_____
4. Contingent on the class exhibiting a replacement behavior after a 30s absence of disruptive behavior			
a. Teacher provides 3 praise statements specific to use of appropriate replacement behaviors	____	____	_____
b. Following verbal praise, teacher continues with direct instruction.	____	____	_____
5. Teacher does not respond to any other problem behavior	____	____	_____
6. Repeat steps 3-4 for each non occurrence of target behavior	____	____	_____

Use the following formula to calculate treatment integrity:

(Total number of checks in the "Yes" column) / (10) x (100) = _____

REFERENCES

Anderson, M. S. (2008). *Use of empirically-based reading interventions to address the academic skills deficits and escape-maintained target behaviors exhibited by elementary school students. (*Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database (AAT 3315855).

Anderson, D. R. (1983). Prevalence of behavioral and emotional disturbance and specific problem types in a sample of disadvantaged preschool-aged children. *Journal of Clinical Child Psychology*, *12*, 130-136.

Arceneau, M. C., & Murdock, J. Y. (1997). Peer prompting reduces disruptive vocalizations of a student with developmental disabilities in a general eighth-grade classroom. *Focus on Autism and Developmental Disabilities*, *12*, 182-186.

Asmus, J. M., Vollmer, T. R., Borrero. (2002). Functional behavioral assessment: A school based model. *Education and Treatment of Children*, *25*, 67-90.

Atwater, J. B., & Morris, E. K. (1988). Teachers' instructions and children's compliance in preschool classrooms: A descriptive analysis. *Journal of Applied Behavior Analysis*, *21*, 157-167

Axelrod, S. (1987). Functional and structural analyses of behavior: Approaches leading to reduced use of punishment procedures. *Research in Developmental Disabilities*, *8*, 165-178.

Barkely, R. A. (1998). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment* (2nd ed.) New York: Guilford.

Boyajian, A. E., DuPaul, G. J., Wartel-Handler, M., Eckert, T. L., McGoey, K. E. (2001).

The use of classroom-based brief functional analysis with preschoolers at-risk for attention deficit hyperactivity disorder.*School Psychology Review*, *30*, 278-293.

Broussard, C. D., & Northup, J. (1995). An approach to functional assessment and analysis of disruptive behavior in regular education classrooms. *School Psychology Quarterly*, *10*, 154-164.

Buscemi, L., Bennett, T., & Thomas, D. (1996). Head Start: Challenges and training needs. *Journal of Early Intervention*, *20*, 1-13.

Carr, E.G. (1977). The motivation of self-injurious behavior: A review of some hypotheses. *Psychological Bulletin*, *84*, 800-816.

Carr, E.G., & Durand, M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis*, *18*, 111-126.

Campbell, S. B., & Ewing, L. J. (1990). Follow-up of hard to manage preschoolers: Adjustment at age 9 and predictors of continuing symptoms. *Journal of Child Psychology and Psychiatry*, *31*, 871-889.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Cooper, J. O., Heron, T. E., &Heward, W. L. (2007).*Applied behavior analysis* (2nd ed.) Upper Saddle River, New Jersey: Prentice Hall.

Cooper, L., Wacker, D. P., Sasso, G., Reimers, T., &Donn, L. K. (1990). Using parents as therapists to assess the appropriate behavior of their children. Application to a tertiary diagnostic clinic. *Journal of Applied Behavior Analysis*, *23*,285-296.

Cowdery, G., Iwata, B. A., & Pace. G. M. (1990). Effects and side effects of DRO as

treatment for self injurious behavior. *Journal of Applied Behavior Analysis*, *23*, 497-506.

Doggett, R. A., Edwards, R. P., Moore, J. W., Tingstrom, D. H., &Wilczynski, S. M. (2001). An approach to functional assessment in general education classroom settings. *School Psychology Review*, *30*, 313-328.

Dufrene, B. A., Doggett, R. A., Henington, C., & Watson, T. S. (2007). Classroom behaviors in preschool and head start classrooms. *Journal of Behavioral Education*, *16*, 368-388.

Eckert, T. L., Hintze, J. M., & Shapiro, E. S. (1999). Development and refinement of a measure for assessing the acceptability of assessment methods: The assessment Rating Profile-Revised. *Canadian Journal of School Psychology*, *15*, 21-42.

Edwards, R.P. (2002). A tutorial for using the functional assessment Informant Record for Teachers. *Proven Practice*, *4*, 31-33.

Ervin, R. A., Radford, P. M., Bertsch, K., Piper, A.L., Ehrhardt, K.E., & Poling, A. (2001) A descriptive analysis and critique of the empirical literature on school-based functional assessment. *School Psychology Review*, *30*, 193-210.

Freer, P. & Watson, T. S. (1999). A comparison of parent and teacher acceptability ratings of behavioral and conjoint behavioral consultation. *School Psychology Review*, *28*, 672-84.

Hanley, G., Heal, N. A., Tiger, J. H., &Ingvarsson, E. T. (2007). Evaluation of a classwide teaching program for developing preschool life skills. *Journal of Applied Behavior Analysis*, *40*, 277-300.

Hoier, T. S., McConnell, S., &Pallay, A. G. (1987). Observational assessment for

planning and evaluating educational transitions: An initial analysis of template matching. *Behavioral Assessment*, *9*, 5-19.

Horner, R. (1994).Functional assessment contributions and future directions. *Journal of Applied Behavior Analysis*, *27*, 401-404.

Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1982). Toward a functional analysis of self-injury. *Analysis and Intervention in Developmental Disabilities*, *2*, 3-20.

Individuals with Disabilities Education Act Amendments of 1997 (P.L. 105-17). 20 U.S.C. Chapter 33, (1997).

Iwata, B. A., Vollmer, T. R. Zarcone, J. R., & Rodgers, T. A. (1993). Treatment classification and selection based on behavioral function. In R. Van Houten and S. Axelrod (Eds.) *Behavior Analysis and Treatment* (pp. 101-125). New York: Plenum Press.

Kamps, D. M., Ellis, C., Mancina, C., Wyble, J., Greene, L., & Harvey, D. (1995). Case studies using functional analysis for young children with behavior risks. *Education and Treatment of Children*, *18*,243-260.

LeGray, M., Dufrene, B. A., Sterling-Turner, H. E., Olmi, D. J., &Bellone, K. (2010). A comparison of function-based differential reinforcement interventions for preschool students engaging in disruptive behavior.*Journal of Behavioral Education*, *19*, 185-204.

Lenox, D. B., & Miltenberger, R. G. (1989). Conducting a functional assessment of problem behavior in applied settings. *Journal of the Association for Persons with Severe Handicaps*, *14*, 304-311.

Martens, B. K., Witt, J. C., Elliot, S. N., &Darveaux, D. (1985) Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice*, *16*, 191-198.

Moore, J. W., Edward, R. P., Sterling-Turner, H. E., Riley, J., Dubard, M., &McGeorge, A. (2002).Teacher acquisition of functional analysis methodology.*Journal of Applied Behavior Analysis*, *35*, 73-77.

Moore, J. W. (2002). *Experimental analysis of social and task variables associated with escape-maintained problem behaviors in the general education classroom.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database (AAT 3067240).

Northup, J., Wacker, D., Sasso, G., Steege, M., Cigrand, K., Cook, J., &DeRaad, A. (1991). Brief functional analysis of aggressive and alternative behavior in an outclinic setting. *Journal of Applied Behavior Analysis*, *24*, 509-522.

Parker, R. I, Hagan-Burke, S. (2007) Single Case research results as clinical outcomes. *Journal of School Psychology*, *45*, 637-653.

Pierce, E. W., Ewing, L. J., & Campbell, S. B. (1999) Diagnostic status and symptomatic behavior of hard-to-manage preschool children in middle childhood and early adolescence. *Journal of Clinical Child Psychology*, *28*, 44-57.

Poole, V. Y. (2009). *Classwide functional analysis and treatment of disruptive behaviors with preschool children.*(Unpublished master's thesis).The University of Southern Mississippi, Hattiesburg, Mississippi.

Reitman, D., Murphy, M. A., Hupp, S. A., & O'Callaghan, P. M. (2004). Behavior

Change and Perceptions of Change: Evaluating the Effectiveness of a Token Economy. *Child & Family Behavior Therapy*, *26*,17-36.

Rose, T. L. (1988). Current disciplinary practices with handicapped students: Suspensions and expulsions.*Exceptional Children*, *55*, 230-239.

Scott, T. M., & Nelson, C. M. (1999). Functional behavioral assessment: Implications for training and staff development. *Behavioral Disorders*, *24*, 249-252.

Skiba, R. J., Peterson. R. L., & Williams, T. (1997). Office referrals and suspensions: Disciplinary intervention in middle schools.*Education and Treatment of Children*, *20*, 295-315.

Solnick, M. D., & Ardoin, S. P. (2010). A Quantitative Review of Functional Analysis Procedures in Public School Settings.*Education & Treatment of Children*, *33*, 153-175.

Sterling-Turner, H. E., Robinson, S. L., &Wilczynski, S. M. (2001). Functional assessment of distracting and disruptive behaviors in the school setting. *School Psychology Review*, *30*,211-226.

Umbreit, J. (1995). Functional analysis of disruptive behavior in an inclusive classroom. *Journal of Early Intervention*, *20*, 18-29.

VanDerHeyden, A. M., Witt, J. C., & Gatti, S. (2001). Descriptive assessment method to reduce overall disruptive behavior in a preschool classroom. *School Psychology Review*, *30*, 548-567.

Von Brock, M. B., & Elliot, S. N. (1987). The influences of treatment effectiveness information on the acceptability of classroom interventions. *Journal of School Psychology*, *25*,131-144.

Vollmer, T. R., Roane, H. S., Ringdahl, J. E., & Marcus, B. A. (1999). Evaluating treatment challenges with differential reinforcement of alternative behavior. *Journal of Applied Behavior Analysis*, *32*, 9-23.

Watson, T. S., Ray, K. P., Turner, H. S., & Logan, P. (1999). Teacher implemented functional analysis and treatment: A method for linking assessment to intervention. *School Psychology Review*, *28*, 292-302.

Webster-Stratton, C., & Hammond, M. (1998). Conduct problems and level of social competence in Head Start Children: Prevalence, pervasiveness, and associated risk factors. *Clinical Child and Family Psychology Review*, *1*, 101-124.

Webster-Stratton, C., Reid, M. J., & Hammond, M. (2001) Preventing conduct problems, promoting social competence: A parent and teacher training partnership in Head Start. *Journal of Clinical Child psychology*, *30*, 283-302.